

C O N F I D E N T I A L

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1 STATE OF MINNESOTA DISTRICT COURT

2 COUNTY OF RAMSEY SECOND JUDICIAL DISTRICT

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4 The State of Minnesota,

5 by Hubert H. Humphrey, III,

6 its attorney general,

7 and

8 Blue Cross and Blue Shield

9 of Minnesota,

10 Plaintiffs,

11 vs. File No. C1-94-8565

12 Philip Morris Incorporated, R.J.

13 Reynolds Tobacco Company, Brown

14 & Williamson Tobacco Corporation,

15 B.A.T. Industries P.L.C., Lorillard

16 Tobacco Company, The American

17 Tobacco Company, Liggett Group, Inc.,

18 The Council for Tobacco Research-U.S.A.,

19 Inc., and The Tobacco Institute, Inc.,

20 Defendants.

21 - - - - -

22 DEPOSITION OF PETER P. ROWELL

23 Volume I, Pages 1 - 255

24

25

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1 (The following is the deposition of PETER
2 P. ROWELL, taken pursuant to Notice of Taking
3 Deposition, at the offices of Dorsey & Whitney,
4 Attorneys at Law, Minneapolis, Minnesota, commencing
5 at approximately 8:30 o'clock a.m., August 26, 1997.

6 APPEARANCES:

7 On Behalf of the Plaintiffs:

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1 P R O C E E D I N G S

2 (Witness sworn.)

3 PETER P. ROWELL

4 called as a witness, being first duly
5 sworn, was examined and testified as
6 follows:

7 ADVERSE EXAMINATION

8 BY MR. SILBERFELD:

9 Q. Would you state your full name for the record.

10 A. Peter Putnam Rowell.

11 Q. Is it Dr. Rowell?

12 A. Yes.

13 Q. Doctor, have you ever had your deposition taken
14 before?

15 A. Yes.

16 Q. Approximately how many times?

17 A. Three times before.

18 Q. Can you tell me the types of cases those were?

19 A. First one was a long time ago in the Army on a
20 military case where I was an investigating officer on
21 lost equipment. And then I didn't do another
22 deposition until just recently in Louisville, two,
23 with tobacco litigation.

24 Q. Two depositions in Louisville --

25 A. Right.

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- 1 Q. -- in the last year?
- 2 A. Yes.
- 3 Q. In what kinds of cases, sir?
- 4 A. These were for the Mississippi case, I guess,
- 5 and -- I cannot remember. One --
- 6 They're two state cases, but I don't remember
- 7 which one.
- 8 Q. One --
- 9 A. Mississippi was probably one.
- 10 Q. You're not sure whether it was Mississippi or --
- 11 A. I'm not sure. I answered the question, but --
- 12 Q. In any event, there were two state cases?
- 13 A. Yeah.
- 14 Q. And when were those depositions, sir?
- 15 A. I don't remember the exact dates, but they were
- 16 this -- I think they were this year. They were
- 17 February something, April. I didn't --
- 18 Q. Certainly in 19 --
- 19 A. I could look it up here actually. I could look
- 20 here if you really want the dates.
- 21 Q. Just the month will do.
- 22 A. Yeah, all right. Probably should be on here.
- 23 Okay. One was on March 26th.
- 24 Q. Does it indicate in your calendar which one that
- 25 was?

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- 1 A. No.
- 2 Q. Okay. Just a deposition.
- 3 A. Yes.
- 4 Q. All right. And the other one?
- 5 A. May 7th.
- 6 Q. Any indication which one that was?
- 7 A. No. That was actually a telephone deposition,
8 so it was -- the deposing attorney was not present,
9 but --
- 10 It was the same attorney for both of them --
- 11 Q. Who was that?
- 12 A. -- that deposed me.
- 13 Anne Ritter.
- 14 Q. And in both those cases I take it you'd been
15 designated as an expert witness?
- 16 A. Yes.
- 17 Q. And you had reports in both those cases?
- 18 A. No.
- 19 Q. Neither one?
- 20 A. No.
- 21 Q. Completely uncivilized.
- 22 What topics did you testify about in those
23 cases?
- 24 A. They asked me questions about the historical
25 review that I had written --

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1 Q. The chapters --

2 A. -- with Dr. Carr.

3 Q. -- with Dr. Carr?

4 A. Right. And some questions about the tobacco
5 documents that I'd read.

6 Q. Anything else?

7 A. That's probably most of it. There may have been
8 a few questions just in general about my opinion
9 about nicotine and how it worked, but mostly it
10 was -- most of that's in the historical review
11 anyway.

12 Q. At the risk of repeating some of the things you
13 may already know about depositions, let me take a
14 moment and go over some of the ground rules we're
15 going to follow here for the next day or so, however
16 long we're together.

17 Together with my partners and associates, we
18 represent the State of Minnesota and Blue Cross Blue
19 Shield. You understand that?

20 A. Right.

21 Q. And this is a lawsuit against the tobacco
22 industry. You understand that?

23 A. Right.

24 Q. The deposition is part of that lawsuit, and even
25 though we're gathered in very informal surroundings

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1 here in this conference room, the testimony that you
2 give today will have the same force and effect as if
3 you were testifying in a court of law. You
4 understand that?

5 A. Uh-huh, yes.

6 Q. And the oath you've taken is the same oath you
7 would take if you were to testify in court. Right?

8 A. Right.

9 Q. In order to make the day go and tomorrow go as
10 smoothly as possible, a couple of ground rules that
11 make depositions different than regular
12 conversation. One of them is the reporter can only
13 really take down one of us talking at a time. And
14 you'll probably be able to anticipate from the
15 beginning part of my question where the question is
16 going. I would ask you to pause and let me finish
17 the question before beginning your answer so that we
18 have a clear record of what I say and what you say.

19 Inevitably, since the reporter takes down
20 everything he hears in the order that he hears it, if
21 you jump in or if I jump in on one of your answers,
22 when we get the transcript of this proceeding, which
23 you'll have an opportunity to review and comment on,
24 you'll see a part of a question, a part of an answer,
25 the rest of the question, the rest of the answer, and

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1 it will just be unusable. So if you would pause for
2 a moment, because counsel may also have comments they
3 want to make or objections they want to make; it will
4 make the proceeding go both more orderly and much
5 quicker actually. All right?

6 A. Okay.

7 Q. Don't answer a question you don't understand.

8 If I ask you a question which makes no sense to you,
9 please tell me so. It won't embarrass me, won't
10 upset me. I'll be happy to try to rephrase it. All
11 right?

12 A. Okay.

13 Q. Any questions about the deposition process at
14 all?

15 A. No.

16 Q. Have you had an opportunity to talk to counsel
17 in preparation for the deposition?

18 A. Yes.

19 Q. And about how much time have you spent doing
20 that?

21 A. About an hour or two on Friday, and then we had
22 dinner last night, maybe a half an hour.

23 Q. Do you have a file that you've kept with regard
24 to your retention in this matter?

25 A. No, not -- not a file per se. I have the notes

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1 that you've gotten --

2 Q. These --

3 A. -- or the documents, and I have papers that I've
4 kept and things like that, but I don't really have a
5 formal file.

6 Q. Okay. You have the papers that you've kept with
7 you?

8 A. No, they're in Louisville. These are research
9 articles that I've read, many of them referenced in
10 the historical review. Probably all of them.

11 Q. How did the historical review come to be
12 written?

13 A. I was contacted about two years ago, I guess, by
14 an individual who worked for some consulting firm and
15 asked if I would be interested in writing a review on
16 nicotine's actions, and since I know a lot about
17 nicotine, I -- I agreed to that. And later on --

18 I met him one time. Later on Michael Nims here
19 came into the process, I guess at the next meeting,
20 and told me a little bit about the -- they wanted
21 this historical review of what nicotine did from the
22 beginning of whenever we wanted to start, and put in
23 what we wanted to, and that's what they wanted. And
24 I said, "Well why do you need this?" And they said,
25 "Well we just want it."

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1 So I was given very little direction, but I
2 agreed to do it, and I enlisted the help of a
3 colleague who's also a nicotine pharmacologist
4 because we obviously have a lot of other
5 responsibilities and we knew it would take a long
6 time to go back through the literature and take a lot
7 of this out, so we both cooperated on writing it.

8 Q. When you were contacted approximately two years
9 ago, you mentioned a consulting firm. Who was that?

10 A. It was Environmental Science or something and --
11 and the fellow's name was Golden, I think.

12 Q. And did you have an understanding as to who
13 Environmental Sciences was?

14 A. No, not at that time.

15 Q. Or who Golden was?

16 A. No.

17 Q. Did you learn later who they were?

18 A. I still don't really know how they were involved
19 in the process, no.

20 Q. What's the business of Environmental Sciences?

21 A. I guess they're a consulting firm of some kind
22 that's retained by different people, probably, in
23 this instance, one of the tobacco companies.

24 Q. Did you know --

25 A. I'm guessing that, but I don't know that.

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1 Q. Okay.

2 A. I don't know really anything about the firm.

3 Q. Is that R. J. Golden? Are those the man's

4 initials or the person's initials?

5 A. I don't know. Again, that information is back

6 in Louisville. I have his card. But I don't

7 remember.

8 Q. And where is Environmental Sciences located?

9 A. I don't remember that. It's in the -- it's in

10 the South somewhere, but I don't remember.

11 Q. Is it called Environmental Risk Sciences?

12 A. That could --

13 That sounds right, yeah.

14 Q. And when you were first contacted about the

15 historical review, were you told anything about what

16 the purpose of that document would be?

17 A. No.

18 Q. Did you ask?

19 A. I think, yeah, we did ask, and we couldn't get a

20 straight answer, quite honestly. When we got into

21 the situation a little bit farther, they indicated

22 they wanted somebody to write this historical review,

23 and I brought up the fact that there must be people

24 who were already on salary that could look through

25 the information as well as I could and write it, and

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1 they said, "Well we want somebody that's
2 disinterested to look at this information and write
3 the review." So we did not know exactly what the
4 purpose of the review was, except they wanted
5 somebody else to look at the history of nicotine and
6 find out what -- what had happened.

7 Q. Somebody else other than whom?

8 A. I guess somebody else other than -- than the
9 Environmental Risk people or people that were in the
10 tobacco company. I mean there's some good scientists
11 that keep up with the literature in the tobacco
12 company as well and they could have done it, and
13 that's what I said. I said, "You could certainly --
14 this isn't -- this isn't research where you need
15 expertise, you just need people that are familiar
16 with the subject." And they said they wanted to have
17 Dr. Carr and me do it. So --

18 Q. Has it been published?

19 A. No.

20 Q. Will it be, to your knowledge?

21 A. I don't know. We --

22 Right now a lot of the information is probably
23 not novel, except for maybe the last two chapters,
24 which are more the historical development of the
25 addiction hypothesis and our opinions on the

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1 addiction hypothesis. Before that there had been
2 many excellent views on nicotine, through chapter
3 nine, and so I don't know that that would be
4 anything --

5 It's got a little bit of a different gist to it
6 in that we were trying to identify the very
7 breakthrough, I guess you'd say, things, the things
8 that really happened that made a difference, rather
9 than trying to come up to date on all the newest,
10 latest developments in nicotine. But right now we
11 have no plans to publish it.

12 Q. Has it been reviewed in a peer-review sense?

13 A. No.

14 Q. Is that planned?

15 A. Well I mean we'd probably --

16 Since this was kind of done on a contract basis,
17 I guess we'd have to get permission to do that. But
18 if we can get out from under all the work we're
19 doing, we might some day decide to do that. There
20 really is very little time now to put any effort in
21 to trying to make this a polished work where we --
22 where we're ready to send it off for peer review, the
23 last two chapters particularly, but I can see those
24 as being of interest and maybe publishable.

25 Q. Do you consider the historical review to be

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1 proprietary to someone, either to Environmental Risk
2 Sciences or some tobacco company?

3 A. That's out of my expertise, but I guess if -- if
4 I --

5 You said do I consider it. I guess I would have
6 to check into whether it is or not because we didn't
7 write it -- we didn't write it on our own volition.
8 We wouldn't have done it without being contacted.
9 And money was put into a research foundation for the
10 review because we said, "Well we just can't do this
11 for free. It's going to take a lot of time." So we
12 didn't want to take the money personally, so we put
13 it in a research foundation. So somebody, I think,
14 thinks they paid for us to do it.

15 Q. All right. Was there a written agreement --

16 A. No written agreement.

17 Q. -- between you and the consulting firm --

18 A. No.

19 Q. -- or you and anyone --

20 A. No.

21 Q. -- with reference to the historical review?

22 A. No.

23 Q. And money was paid for the work that was done.

24 A. Yes.

25 Q. And that money went into a research foundation?

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1 A. Right.

2 Q. Which one?

3 A. At the University of Louisville. It's a
4 university research foundation for graduate student
5 stipends or buying supplies or things like that for
6 the department. The department chair has control of
7 the research foundation, but --

8 Q. What's it called?

9 A. It's called University of Louisville Research
10 Foundation.

11 Q. And what activities does it support?

12 A. Really any activities that have to do with
13 original research that's conducted at the university,
14 but -- but only --

15 There are account numbers within that research
16 foundation, so this is in a -- in a subset of the
17 research foundation --

18 Q. What was the --

19 A. -- which --

20 Q. I'm sorry, go ahead.

21 A. -- which really is a departmental account, I
22 guess you'd say.

23 Q. The Department of Pharmacology?

24 A. Right.

25 Q. So there is a university-wide research

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1 foundation.

2 A. Right. It's the -- it's the umbrella

3 organization over all of the money that comes in

4 through gifts or donations and things like that.

5 Q. And then within that there is an account for the

6 department that you're in.

7 A. Right, right.

8 Q. And these monies that were received for the work

9 done on the historical review went into the research

10 foundation earmarked for the department, --

11 A. Yes.

12 Q. -- in a sense?

13 A. Yes.

14 Q. How many dollars were paid for the work done on

15 the historical review, approximately?

16 A. Approximately it's 20 to 30 thousand dollars, I

17 think.

18 Q. And describe for me, if you would, the process

19 that you and Dr. Carr --

20 Is it Dr. Carr?

21 A. Yes.

22 Q. -- that you and Dr. Carr went through in order

23 to do the work that resulted in the finished product.

24 A. When we originally started, because this was

25 going to be a historical review, we were going to

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1 organize it by chronological order starting in the
2 18 -- mid-1800s and working forward and talking about
3 advances that took place through that time. And we
4 actually submitted a proposal for an outline and said
5 this is the way we're going to proceed. And we
6 started to write it that way, but it soon became
7 evident that we really couldn't write it
8 chronologically because we'd have to go -- things
9 intertwined and -- and it was much better to organize
10 it by a subject area. So we went back and re --
11 redid what we'd already done and put it in one
12 subject area and carried that from the beginning
13 to --

14 Basically we figured when we thought there was
15 not more important information, then we started on
16 another subject area. And it developed into about
17 nine chapters, I think nine chapters.

18 And then because I was interested in this,
19 originally I had been a little bit of an outspoken
20 person that I was not enthralled with the nicotine
21 addiction hypothesis, I put in the 10th chapter,
22 really, of my own volition.

23 Q. Which one is that?

24 A. Which is -- which is really a subjective
25 chapter, not so much on a historical view, but our

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1 opinion on what the information in the previous
2 chapters tells us about whether nicotine is a drug of
3 dependence, and if so, what degree of dependence it
4 has, and is it -- should it be considered a drug of
5 addiction like cocaine, morphine, things like that.

6 Q. Is it fair to characterize that chapter as
7 editorial in nature?

8 A. Yes, I would say so.

9 Q. Getting back to how the building blocks of the
10 historical review were put together, --

11 A. Uh-huh?

12 Q. -- I take it that one step of it was sort of
13 classic research and gathering information.

14 A. Right.

15 Q. Okay. Who did that?

16 A. We did it.

17 Q. You and Dr. Carr.

18 A. Dr. Carr and I.

19 Q. Alone?

20 A. Yes.

21 Q. Any assistance from anyone else?

22 A. No.

23 Q. Research assistants, students, anything like
24 that?

25 A. Well I have a laboratory technician that would

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1 go down and copy articles, but I would identify the
2 articles, since she'd sometimes write off her
3 interlibrary loans and books and things that we'd
4 come across. But --

5 Q. And in selecting the materials to consider, --

6 A. Uh-huh?

7 Q. -- what sources did you go to?

8 A. We made use of Index Medicus before it was
9 computerized, and then from 1966 when it became a
10 computer database we used the on-line Medline
11 searches. We also used the encyclopedic edition of
12 Larson & Silvette; it's a big compendium book of
13 nicotine and tobacco research, plus there are three
14 supplements, and we used two of the three
15 supplements. The only reason we didn't use the third
16 one is because we never could get ahold of it. But
17 we used that for some of the older historical work,
18 and then, where we could, we looked up some of the
19 important papers directly. Many of them we had to
20 get with an interlibrary loan.

21 Q. Did you draw on your own experience?

22 A. Yes, uh-huh.

23 Q. Did you interview anyone in connection with the
24 preparation of the historical review?

25 A. No.

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1 Q. Did you look at any tobacco industry or tobacco
2 company documents in connection with the preparation
3 of the historical review?

4 A. No.

5 Q. Why not?

6 A. I didn't have any company documents when we
7 wrote the review.

8 Q. Did you ask anyone for them?

9 A. No. That -- we were --

10 In fact, we were asked to look at what was in
11 the public literature and look through --

12 It didn't occur to me to go to the industry
13 documents.

14 Q. Did you understand --

15 A. I mean that wasn't part of the charge.

16 Q. I interrupted you this time. I'm sorry.

17 Did you understand your charge to be limited to
18 the publicly available published work in Index
19 Medicus or the world medical literature?

20 A. Yes.

21 Q. In preparing the historical review, did you have
22 any intellectual curiosity as to what one or more
23 tobacco companies knew about nicotine?

24 A. Well no -- no more so than I've had even before
25 we started to write the review. I mean we read the

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1 paper and read some article in Time Magazine and
2 things like that, but I didn't associate this review
3 as much with the tobacco documents as I guess I came
4 to appreciate later of why we were doing it. At that
5 time I had not thought that we would be involved in
6 litigation or testimony or anything. I mean it was
7 never brought up that we would ever even see any
8 documents.

9 Q. The work in connection with the historical
10 review began approximately two years ago?

11 A. Yes.

12 Q. 1995?

13 A. I think that's right, yeah.

14 Q. How long did it last?

15 A. Longer than we thought, but a year and a half or
16 so.

17 Q. And from the date, I gather it was in its
18 finished form earlier this year?

19 A. Yes.

20 Q. February, March, something like that?

21 A. We had it pretty much together by the end of
22 1996. Had submitted all the individual --

23 We submitted things individually as they went
24 along. When one chapter was finished, we would send
25 it in, and then they would contribute the money to

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1 the research foundation, and then we'd submit the
2 next chapter. And those chapters were all pretty
3 much put together. We hadn't -- we hadn't gone
4 through and checked the references to make sure the
5 years were right and the authors were right, things
6 like that, so we did a final reading and -- and
7 reprinted it out and put it together and sent it off
8 in February.

9 Q. Was the agreement between you and Dr. Carr on
10 the one hand and Environmental Risk Sciences on the
11 other that they would put money into the research
12 foundation on a per-chapter or per-section basis?

13 MR. NIMS: Objection.

14 MR. SILBERFELD: Go ahead.

15 A. Well we didn't --

16 As I say, the Environmental Risk firm wasn't
17 really involved in it after the initial contact.

18 Q. Ah. So they introduced you to someone.

19 A. They introduced me, yeah.

20 Q. To whom?

21 A. To Michael Nims.

22 Q. Okay.

23 A. Who then I dealt with after the second meeting,
24 I guess.

25 Q. And was it to Mr. Nims that you submitted the

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- 1 chapters?
- 2 A. Yes.
- 3 Q. So from and after the time of the original
- 4 introduction, the consulting firm was really out of
- 5 the picture.
- 6 A. Yes. That's why I said I never met Mr.
- 7 Golden --
- 8 Q. Okay.
- 9 A. -- more than the first time.
- 10 Q. All right.
- 11 A. And I don't remember much about the firm.
- 12 Q. And then once you met Mr. Nims, your contact was
- 13 really with him --
- 14 A. Yes.
- 15 Q. -- both in terms of the financial aspect as well
- 16 as the submission of chapters and so forth.
- 17 A. Yes.
- 18 Q. All right. Was it in fact the case that you
- 19 submitted the chapters one at a time?
- 20 A. Yes.
- 21 Q. And who did you submit the chapters to?
- 22 A. Mr. Nims.
- 23 Q. And did he review and comment on them?
- 24 A. No.
- 25 Q. Do you know whether he ever offered any

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1 suggestions of an editorial nature?

2 A. We talked about what we meant when we said
3 certain things and -- later on when the whole thing
4 was together. As we submitted them, he never -- he
5 never really commented on it at all. But --

6 Q. Going along.

7 A. Going along.

8 Q. At the end when the entire piece was put
9 together, there was a discussion about that?

10 A. Right.

11 Q. Give me the substance of that conversation.

12 A. There were lots of little conversations. There
13 wasn't really any -- it's hard to remember. We -- we
14 talked about what --

15 I used the word "compulsive" behavior in there,
16 that cigarette smoking is compulsive. What do we
17 mean by the word "compulsive?"

18 "Is that the word you want to use?

19 "Yes.

20 "What is addiction? Are you clear with your
21 definition of addiction?" Things like that. But
22 we --

23 He didn't review it or make any -- make any
24 suggestions that we didn't think were worthwhile.

25 Q. As a result of any comment made by Mr. Nims, was

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1 anything deleted from the historical review --

2 A. No.

3 Q. -- or added to it?

4 A. We changed some things in the historical review
5 as a result not of -- as a result of things that he
6 asked us to think about.

7 Q. Such as?

8 A. One thing I can remember is we were debating
9 about --

10 We didn't want to make up our own definition of
11 addiction because there are definitions of addiction,
12 and we had looked at the DSM IIIR and DSM IV, and Dr.
13 Carr and I were a little dissatisfied, but we said
14 okay, there are nine points in the DSM IIIR and seven
15 in the DSM IV, and maybe we can use those in
16 addiction. And we talked a little bit about the
17 Surgeon General, and I remember we had a discussion
18 about the Surgeon General's definitions, which are
19 three points, compulsive drug use, drug reinforced
20 behavior, and psychoactive effects, and they were new
21 and a lot of people were using those, and I said
22 well, if we were going to stick with a definition,
23 we'd use that definition.

24 That's probably one of the only things that we
25 maybe thought about longer and decided that probably

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1 the Surgeon General's 1988 three points was as good
2 or better than the DSM IV definitions. We could
3 have --

4 I don't think that really made a difference
5 because I don't think nicotine satisfies either one
6 for addiction as a drug.

7 Q. So for purposes of the historical review, you
8 accept the Surgeon General's 1988 definition of
9 addiction?

10 A. Yes.

11 Q. And in your opinion, does nicotine satisfy that
12 definition?

13 A. No.

14 Q. Why not?

15 A. Because there's no evidence of compulsive drug
16 use. I can't think of a single example where anyone
17 compulsively uses nicotine.

18 Q. How about cigarettes?

19 A. They're smoking cigarettes.

20 Q. Right.

21 A. They're not using nicotine. So --

22 Q. Well do you regard smoking as a compulsive
23 behavior?

24 A. Yes.

25 Q. All right. Let's just, since we're here, in no

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1 particular order, talk about the three elements of
2 the Surgeon General's definition in '88. The first
3 is?

4 A. The first is compulsive drug use, and it
5 specifically says --

6 I don't have it with me, but it's talking about
7 use of drugs.

8 Q. I have it with me.

9 A. Oh.

10 A. The title right above that, those three points,
11 says something about --

12 Q. I'm on the wrong page.

13 Oh, here we go. Let me just show you this page,
14 it's page seven, --

15 A. Yes.

16 Q. -- where it says "Criteria."

17 A. For drug dependence.

18 Q. Okay. Is that what you were referring to?

19 A. Yes. There's nothing in there about behavior.

20 Q. So the first --

21 There's three primary criteria and then
22 additional criteria.

23 A. Right.

24 Q. We're agreed about that; aren't we?

25 A. Right.

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- 1 Q. The first is highly controlled or compulsive
2 use.
- 3 A. Right.
- 4 Q. The second is psychoactive effects.
- 5 A. Right.
- 6 Q. And the third is drug reinforced behavior.
- 7 A. Right.
- 8 Q. With respect to cigarette smoking, do you have
9 an opinion as to whether that is a highly controlled
10 behavior?
- 11 A. I would probably say that's a highly controlled
12 behavior, yes.
- 13 Q. And I think you've already said it's a
14 compulsive behavior.
- 15 A. Yes.
- 16 Q. And do components of cigarettes have
17 psychoactive effects?
- 18 A. Very mild psychoactive effects, but I would
19 agree they do.
- 20 Q. And one of those components is nicotine?
- 21 A. Yes.
- 22 Q. And there are others?
- 23 A. Probably.
- 24 Q. How many psychoactive compounds are there in
25 cigarettes, as far as you understand?

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1 A. Well the only one I'm clear about is nicotine.
2 There are other compounds that are nicotine-like
3 compounds that have psychoactive effects. Probably
4 many of the compounds could be demonstrated to have
5 psychoactive effects, but I'm not sure, in
6 concentrations that cigarette smokers are exposed to,
7 that they would have them at those levels. So
8 there's a difference --

9 It has to do with concentration, really. A lot
10 of things will have psychoactive effects.

11 Q. And is cigarette smoking, in your opinion, a
12 drug reinforced behavior?

13 A. Yes. The third one is the one I agree with the
14 most; the second one marginally; the first one not at
15 all.

16 Q. Okay. Tell me why you disagree with the first
17 criteria, that having been highly controlled or
18 compulsive use.

19 A. Because it's not a highly controlled or
20 compulsive drug dependence, which is --

21 That says "Criteria" for drug dependence, and I
22 don't agree that people are smoking cigarettes solely
23 for the effects of nicotine.

24 Q. They smoke cigarettes for other reasons.

25 A. They smoke cigarettes largely because they have

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1 behavioral conditioning, compulsive behavior.
2 There's a lot of behaviors that are very compulsive,
3 hard to stop, that have nothing to do with drugs, and
4 I think cigarette smoking fits those kinds of
5 criteria much better than it does trying to smoke
6 just to get nicotine. So it's not a drug dependence,
7 in my opinion.

8 Q. And is that view that you just expressed, in
9 your estimation, generally accepted within the
10 medical and scientific community?

11 A. Interestingly, if you look at the published
12 information that's not the view, but I have had
13 conversations with many people and almost everybody
14 agrees that there's a large behavioral component to
15 cigarette smoking, and I think the disagreement among
16 people is the contribution of the behavioral part to
17 the nicotine delivery part. And so that's a --
18 that's an area of disagreement. But there are many
19 people that I have spoken to who agree that behavior
20 is obviously a component; it's just how big that
21 component is compared to the nicotine.

22 Q. Sure.

23 Putting aside conversations that you've had
24 either in professional meetings or --

25 A. Right.

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1 Q. -- over a drink or wherever, a fair assessment
2 of the world medical literature on the subject is
3 that your opinion is out of the mainstream on this
4 subject. Fair?

5 A. For the organizations, the AMA, the Surgeon
6 General's report, that's true, but there have been a
7 number of publications of individual scientists. But
8 then you'd say all of us are out of the mainstream.
9 But there are a number of people that have written
10 that cigarette smoking is not a drug addiction, it's
11 not properly classified as a drug addiction. In fact
12 I have a couple of the references in the review.

13 Q. We'll talk about them.

14 A. Okay.

15 Q. Getting back to the historical review and its
16 creation, --

17 A. Uh-huh.

18 Q. -- to your knowledge, did anyone other than Mr.
19 Nims receive and review the chapters as they were
20 submitted by you and Dr. Carr?

21 A. Not to my knowledge.

22 Q. Have you ever had any contact with a person
23 named -- the last name is McElveen,
24 M-c-capital-E-l-v-e-e-n?

25 A. Yes.

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1 Q. And who is that?

2 A. I think he accompanied Mr. Golden, or it may
3 have been Mr. Nims on the second meeting we had, when
4 we first started talking about writing the review.

5 Q. And did you have an understanding as to who Mr.
6 McElveen was?

7 A. I knew he was an attorney, but I don't remember
8 that I --

9 I think I probably remember at the time that he
10 worked for one of the tobacco companies. I can't
11 remember which. And I have not met him since, so
12 it's been a year and a half. But I had one meeting
13 with him.

14 Q. And what happened in that meeting?

15 A. It was just a follow-up of why they wanted the
16 review written and what they -- what they wanted us
17 to focus on, which was the historical aspects of
18 nicotine. Really, what I said, there was no --

19 You know, my questioning about "Do you really
20 want to spend all this time going back through the
21 literature?

22 "Yes.

23 "Why you want to do it?

24 "Well we just want you to do it."

25 MR. NIMS: Just to make sure the record is

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1 accurate, obviously Dr. Rowell's recollection is
2 whatever it is, but Mr. McElveen is also a partner at
3 Jones Day. He does not in fact work for a tobacco
4 company.

5 THE WITNESS: Oh, I didn't know that.

6 (Discussion off the record.)

7 BY MR. SILBERFELD:

8 Q. After your first meeting with Mr. McElveen, did
9 he have any role, as far as you know, in the review
10 and comment and final prep of the historical review?

11 A. Not as far as I know.

12 Q. Earlier we talked about a final chapter that was
13 really editorial in nature. Is that the ninth
14 chapter, or is there some later chapter that I don't
15 have? Because mine ends at nine.

16 A. Oh, it is nine. Yes.

17 Q. Okay.

18 A. That's the chapter.

19 Q. So is the most recent version of it the February
20 19th draft?

21 A. Yes.

22 Q. All right. Thanks.

23 A. Yeah. We had originally decided --

24 It doesn't matter, but our purpose and scope was
25 in the very first draft chapter one, so there were 10

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1 chapters, but that turned out to just being kind of
2 an introduction, so we didn't put a chapter number on
3 it, so everything was renumbered. So I was thinking
4 in the old -- old numbers.

5 Q. Okay. When were you first contacted about being
6 an expert witness in this or any tobacco litigation?

7 A. At the end of 1996, probably November or
8 something like that.

9 Q. By whom?

10 A. Mr. Nims.

11 Q. And at that time what did he ask you to do?

12 A. He said that they would be giving us tobacco
13 documents from the tobacco companies and that we
14 would -- should read them and really do two things:
15 see if there was any important or breakthrough
16 information that was contained in those documents
17 that wasn't already known in the public literature,
18 and if that was of sufficient quality to have been
19 published in a peer-review journal.

20 Q. And anything else that he asked you to do at
21 that point?

22 A. No.

23 Q. Were you asked at the time of your first contact
24 about being an expert witness by Mr. Nims to express
25 any opinions of any kind?

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1 A. Well just those two opinions about what we read
2 in the documents.

3 Q. Did you understand --

4 A. And --

5 Q. I'm sorry.

6 A. -- I'm not sure that we were aware at the time
7 that we would be an expert witness. Again, having
8 been the first experience here, we were just asked to
9 go through the documents and make those two
10 determinations, and again, we didn't really know
11 where that would end up. We would go through and
12 make --

13 That's why I took a lot of notes, because I
14 wanted to make sure that if I saw anything, I would
15 have an indication of it. So when you said "expert
16 witness," I don't know that at that point it was
17 clear to me that I would be an expert witness
18 anywhere.

19 Q. At some point in time did you agree to be
20 designated as an expert witness?

21 A. Yes.

22 Q. And when was that?

23 A. That was earlier this year, probably February.

24 Q. And at that time did you have an understanding
25 that you would be asked to express certain opinions?

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- 1 A. Right.
- 2 Q. And what were those opinions?
- 3 A. Well where I would be asked to express an
- 4 opinion on expert testimony would be the actions of
- 5 nicotine, and what -- what I considered novel or
- 6 important information in tobacco documents, and was
- 7 it of sufficient quality to be published. So in
- 8 addition to the tobacco documents, we would be called
- 9 as an expert witness on the -- on the actions of
- 10 nicotine in the body. There are kind of two parts to
- 11 it.
- 12 Q. So the actions of nicotine, --
- 13 A. Right.
- 14 Q. -- and then the other two things you were asked
- 15 to look at in late 1996, --
- 16 A. Right.
- 17 Q. -- those being whether there was anything
- 18 important in the tobacco documents, and whether the
- 19 things in the documents were of sufficient quality to
- 20 be publishable; right?
- 21 A. Yes.
- 22 Q. Anything else?
- 23 A. No.
- 24 Q. And after early 1997, did the scope of your
- 25 expert testimony change in any way, either expand or

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1 contract, from the three topics we've talked about?

2 A. No. That's -- up to this point, that's pretty
3 much my understanding of what my expertise is.

4 Q. And is it your judgment, Dr. Rowell, that the
5 historical review really represents your opinion and
6 your point of view on the actions of nicotine?

7 A. Yes. I mean much of the historical review,
8 obviously, is work that I didn't do and I'm not --
9 it's not in my area specifically of expertise even
10 though it's about nicotine, like electroconvulsive
11 activity and things like that. But we rely on the
12 expertise of the other people that have done the
13 work.

14 Q. Going back to 1995 --

15 A. Uh-huh?

16 Q. -- when you were first contacted about doing a
17 historical review, the Environmental Sciences entity
18 contacted you and asked you to consider whether you
19 would write such a paper.

20 A. Right.

21 Q. Did you agree right off to do it?

22 A. No. This was a phone conversation. We -- I
23 just got a telephone call.

24 Q. Uh-huh.

25 A. And I really wanted to know a little bit more

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1 about it and what they wanted and how long it would
2 take. And subsequently they came to Louisville and
3 we had a longer conversation about it where I asked
4 some of these questions about, you know, is this
5 going to take a lot of time and why did they want me
6 to do it. And I enlisted the help of Dr. Carr right
7 away and we both met. So probably by that meeting,
8 though, I felt confident that we could do it, it's
9 just whether we wanted to do it, had the time to do
10 it.

11 Q. The meeting at Louisville, was that with Mr.
12 Golden and Mr. McElveen?

13 A. I think it was.

14 Q. And you were there?

15 A. Yes.

16 Q. And Dr. Carr was there?

17 A. Yes.

18 Q. Anyone else?

19 A. I can't remember. I don't think so. I mean I
20 don't know whether Mr. Nims was there at that time
21 but I don't think he was. He may have been. He
22 became involved soon, but I don't remember it was
23 that very first meeting or not.

24 Q. Soon thereafter --

25 A. Yes.

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1 Q. -- if not at that meeting.

2 A. Right.

3 Q. Okay. And did you ever get a satisfactory
4 answer to the question of why they wanted you to do
5 it, other than they wanted you to do it?

6 A. No, although I developed my own answer to the
7 question. But they've never given me the answer.

8 Q. What's your answer?

9 A. Well I think they wanted me to do it because
10 they had in mind that they would eventually show me
11 tobacco documents to see whether there were in fact
12 information in there that wasn't already in the
13 public literature. But when we wrote the review we
14 had no idea that that's what -- and I'm not even
15 sure, I'm just -- I'm just surmising that that was --
16 they were interested in getting somebody that was not
17 connected with the tobacco industry, had not had
18 funding from the tobacco industry, to look at
19 nicotine and make an objective, considered,
20 reasonable assessment of whether the information in
21 the tobacco documents really was new information and
22 publishable information, the two things that they
23 really asked me to look at.

24 Q. You make a point in your report early on where
25 you say, "I have never received any research grants

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1 from tobacco industry sources or been provided with
2 any financial rewards or personal income from the
3 tobacco industry." Why is that important to you?

4 A. Because a lot of the people that I've talked to,
5 I think their immediate question is, "Has this work
6 been funded by the tobacco industry?" And for some
7 reason a lot of people make a big deal about that.
8 When we look at the -- at scientific meetings at
9 things, whether -- if that was tobacco-funded
10 research, they look askance at it and maybe they
11 suppress some of the findings or something like
12 that. Also, some of the other people that I know
13 have said, "Well, you know, I've had many years of
14 funding by the tobacco industry, so my opinion may
15 not be considered appropriate in a court," things
16 like that.

17 So I wanted to make the point that really I have
18 no axe to grind here. I'm not on an agenda or
19 vendetta or anything for either side. So I'm just
20 expressing my opinion in an objective and reasonable
21 way.

22 Q. That particular statement in the report about
23 not having received grant money or personal income
24 was really intended by you, was it not, to eliminate
25 the notion of bias from your opinions?

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1 A. Yes. I mean some people read bias into where
2 you get the funding from. Personally I really don't,
3 because I think there are very good scientists that
4 have done good work supported by the tobacco
5 industry, and I've looked at that, and their result
6 is the same as anybody else's. But not everybody
7 does that, I have found out, over the years.

8 Q. When you say that you have never received any
9 research grants from tobacco industry sources, I take
10 it that that was a true statement at the time you
11 wrote it roughly in July of this year.

12 A. Yes.

13 Q. Okay. How would you characterize the money that
14 was paid for the historical review?

15 A. Well I haven't received those as research
16 grants. I mean I haven't written grants or received
17 grants for any research, and none of the money that
18 has gone into that review has been spent for me or
19 anything. So --

20 Q. Is it true that it was money spent by someone,
21 ostensibly the tobacco company, --

22 A. Uh-huh.

23 Q. -- to have you and Dr. Carr do research?

24 A. Not necessarily.

25 MR. NIMS: Objection.

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1 Q. What was the purpose of the money then?

2 A. The purpose of the money is just so we wouldn't
3 be doing this for free. I mean it may be that that
4 research money is spent for graduate-student stipends
5 that don't even work for me. The department chair
6 has the authority to disburse funds and he has used
7 some of the money to support some secretarial help in
8 the office. But I really couldn't see writing this
9 review just with no compensation anywhere, so we
10 asked for that money to be put in the research
11 foundation.

12 Q. And the money that was put in was to pay for
13 your labor and that of Dr. Carr and perhaps your
14 assistant.

15 A. Yes.

16 Q. Okay. So it was money received for labor
17 provided and services rendered by you and Dr. Carr.

18 A. Yes. But we didn't receive it.

19 Q. Not personally.

20 A. Right. Or --

21 Q. It went into the research foundation.

22 A. Yes.

23 Q. Okay. But it was money that was received by the
24 university and your department as a result of your
25 agreement with Environmental Sciences, and I take it

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1 Mr. Nims and maybe his colleague.

2 A. Yes. It's really money that's in the

3 university. Any interest that accrues goes to the

4 university. They could -- they could take that

5 account tomorrow and say -- and -- and the department

6 chair could, the president of the university could.

7 I mean I don't have control of that money. I have,

8 I'm sure, hopefully, input into how it's spent, but

9 that's not even in writing. I mean they could in

10 fact decide that they want to buy a new instrument

11 for the toxicology lab with that money.

12 Q. And that process, that is, the payment of money

13 for the work done by you and Dr. Carr --

14 A. Uh-huh?

15 Q. -- in terms of this historical review, that

16 process is no different than the NIH, for example,

17 giving you money or granting you money to do some

18 sort of research. That money also goes into the

19 university; true?

20 A. Well no, because that money goes into an account

21 that I have signature authority for and that's for my

22 research and that really couldn't be spent for

23 anything else. That has to be justified, because NIH

24 gave that for my research and I can't go out and do

25 something else with it. So I see -- and I -- you

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1 know, I applied for that money and wrote a grant for
2 that money. I see it a little differently than a
3 research grant.

4 Q. All right.

5 A. So --

6 Q. Would you characterize the money that was paid
7 for the historical review as a financial award?

8 A. An award? Not really. It was a financial
9 contribution I guess. I don't know what you mean by
10 "award," I guess is what --

11 Q. As you use the word in your report. Here, let
12 me just show you.

13 A. Okay. I have never had any --

14 "Financial awards," okay.

15 Q. As you use that term.

16 A. Yeah. I didn't remember that word. But I
17 probably wouldn't characterize that as a financial
18 award.

19 Q. You would not.

20 A. Yeah. Because to me that would be something
21 that I solicited myself, went out and tried to to
22 obtain, like a grant.

23 Q. It is often the case in your writings that you
24 acknowledge the source of funding; --

25 A. Uh-huh.

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1 Q. -- true?

2 THE REPORTER: Your answer?

3 THE WITNESS: Yes.

4 Q. One of the ground rules I didn't cover. You
5 have to answer out loud. All right?

6 Do you anywhere in the historical review
7 acknowledge the source of funding of this document?

8 A. No. But if that was published, we would.

9 Q. And what would you say?

10 A. Well I'd have to investigate where that money
11 came from. I mean that --

12 I don't even know. I have not seen the checks
13 that were sent. All I know is the departmental
14 administrator says that the money has appeared. When
15 I sent a letter in saying, "We request this much
16 money be sent to the research foundation," she would
17 tell me weeks later, "Well the money was sent to the
18 research foundation." So I don't know --

19 I assume it came from a law firm, but I haven't
20 seen the check because it didn't go to me, it went
21 to -- it went to our departmental administrator, who
22 deposited it in the account.

23 Q. Has all the money that was due to be paid been
24 paid, as far as you know?

25 A. As far as I know.

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- 1 Q. And that was pursuant --
- 2 A. On this that's true, yes.
- 3 Q. On the historical review alone --
- 4 A. Yes.
- 5 Q. -- is all we're talking about.
- 6 A. Yes.
- 7 Q. And the mechanism by which the money would be
- 8 received by the university is you would write someone
- 9 a note or a letter saying, "We finished chapter
- 10 five. Kindly send a check in the amount of X."
- 11 A. Yes.
- 12 Q. Okay. And that was directed to whom in each
- 13 case?
- 14 A. Mr. Nims.
- 15 Q. And he was faithful to his agreement, I take it?
- 16 A. Yes.
- 17 Q. Okay. Good. Happy to find that out.
- 18 When you were first asked to act in an
- 19 expert-witness capacity, did you agree right away or
- 20 did you think about it for a time?
- 21 A. I think I agreed right away on the expert
- 22 witness.
- 23 Q. Why?
- 24 A. I consider myself very knowledgeable about
- 25 nicotine. I -- I feel that I'm competent to discuss

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1 nicotine's actions. I read a lot of the documents
2 and I feel quite confident in my -- in my opinion,
3 and I don't have any problem with appearing as an
4 expert witness for certain aspects of the case.

5 Q. When you were contacted at the end of 1996 by
6 Mr. Nims, you had been told that you would be given a
7 set of documents; right?

8 A. Yes.

9 Q. And these were tobacco industry documents or
10 company documents?

11 A. Right.

12 Q. And did those appear?

13 A. Yes.

14 Q. And did you look at them?

15 A. Yes.

16 Q. And tell me the brackets of the time period when
17 you looked at those documents.

18 A. The time period that the documents covered --

19 Q. No.

20 A. -- or the time period that I spent?

21 Q. The last.

22 A. Okay. I think we received those documents in
23 November or early December, and from then right up to
24 the present time as I have received documents we've
25 read the documents and looked at them. Dr. Carr has

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1 received some, I received some.

2 Q. So Dr. Carr was involved in this process as
3 well?

4 A. Yes. And I don't know what documents he's
5 received, but I know he --

6 In the initial batches we received one -- well,
7 a big stack of documents that we both read over
8 Christmas.

9 Q. Is there a reason both you and Dr. Carr were
10 involved in the document review, as far as you
11 understood it?

12 A. I don't know what the reason is. I learned that
13 we were --

14 I'm aware that we were considered fungible in
15 certain instances, but --

16 Q. We all are.

17 A. That's not a word we use in science very often.

18 Q. Describe --

19 A. We were --

20 Q. I'm sorry. Yeah.

21 A. We were involved more in those initial
22 documents. We kind of separated a little bit.
23 Because I don't know what he's received and I haven't
24 told him when I receive a batch of documents. I mean
25 I've been told to read these documents and I haven't

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1 given them to him, so --

2 But initially we received one set and we shared
3 them. They were big stacks, though; we didn't get
4 two of everything.

5 Q. That was really going to be my next question to
6 you.

7 A. Yeah.

8 Q. When the first stack came, whatever it consisted
9 of, --

10 A. Uh-huh?

11 Q. -- was there one set or two sets of the same
12 thing, or what?

13 A. There was one set of the documents.

14 Q. And did you and Dr. Carr look at the entire set
15 serially, you looked at them first or he looked at
16 them first, and then they went to the other person?

17 A. He took part, I took part, and then we switched
18 and eventually we got through all of them, both of
19 us.

20 Q. Okay. And did you and he discuss your review of
21 the documents?

22 A. Not in any formal manner. We probably had some
23 call conversations about something, but we've never
24 sat down and had discussions on the documents.

25 Q. And then after that initial batch of documents

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1 came and was reviewed by both of you, further
2 documents came.

3 A. Yes.

4 Q. And were those --

5 Were the next set of documents, whatever they
6 consisted of, reviewed by both of you?

7 A. I can't remember. I'm not sure that he
8 looked -- I know he hasn't looked at all the
9 documents I looked at recently, but I can't remember
10 if it was the second set or the third set where we
11 separated. We received documents a half a dozen
12 times or more, notebooks of information and things
13 like that, boxes, stacks sometimes, just a few.

14 Q. And at some point in time the process of having
15 both of you look at the same pieces of paper stopped
16 as far as you understand it?

17 A. Well he may have been receiving documents also.
18 I mean maybe the same ones.

19 Q. You just don't know.

20 A. I just don't know what he's looked at. But I
21 have not given him the documents that I've looked
22 at --

23 Q. Okay.

24 A. -- recently.

25 Q. And that's been true for how many deliveries of

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1 documents to you?

2 A. Four or five probably.

3 Q. When was the last time you got a set of

4 documents before today?

5 A. About two or three weeks ago.

6 Q. And have those been looked at?

7 A. I've got three notebooks, I've looked at one of

8 the three. I just have not had time to look at the

9 other two. But they were black notebooks about two

10 inches thick or something each.

11 Q. And I take it that your purpose in looking at

12 these was to answer the two questions that you told

13 us about earlier?

14 A. That's been the focus of all my work on looking

15 at the documents.

16 Q. Is there anything meaningful or important in

17 them, and is it of sufficient quality to be

18 published.

19 A. Yes.

20 Q. And with respect to your document review, did

21 you make notes?

22 A. Yes.

23 Q. Describe the method of your note-taking.

24 A. I took a piece of paper and just, in pencil,

25 jotted down information as I read the document. And

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1 I usually finished that up, almost every case, on the
2 front side of one piece of paper, which is what is in
3 this notebook.

4 Q. Let me take a look at it.

5 A. Sure.

6 Q. Stole the binder from someplace?

7 A. Yeah.

8 Q. Okay. You've handed me a three-ring binder that
9 contains pages of handwritten notes with tabs that
10 say B.A.T., LOR --

11 Is that for Lorillard?

12 A. Yes.

13 Q. PM is for Philip Morris?

14 A. Yes.

15 Q. And RJR for Reynolds?

16 A. Yes.

17 Q. Are these notes all the notes in existence with
18 respect to your review of tobacco company documents?

19 A. Yes.

20 Q. And as to these documents that you reviewed,
21 were all of them furnished to you by counsel?

22 A. Yes.

23 Q. Were any of the documents that you looked at
24 ones that caused you to ask counsel to provide you
25 yet other documents?

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1 A. In a few cases there were a couple of pages
2 missing, and there were one or two instances where
3 some other information was referenced and I asked if
4 I could see that information.

5 Q. So Document A might refer to Document B, and you
6 would ask that Document B be provided to you?

7 A. Document B. Yes.

8 Q. And did that happen?

9 A. When they could locate it. There were a couple
10 of instances where they said they could not locate
11 the information, it was done in Germany in the 1950s,
12 and things, but they -- as far as I know, they tried
13 to find it. And I have noted on there the documents
14 that I asked for somewhere in the appropriate pages.

15 Q. This is --

16 This binder with your notes in it is easily 500
17 pages?

18 A. I don't know. I guess.

19 Q. Looks like a ream of paper; doesn't it?

20 A. Yeah, probably. I think I've looked at about
21 400 some documents, so it's probably about 400. It's
22 about one per document.

23 Q. And did you create the notes at or about the
24 time that you reviewed the document?

25 A. Exactly at the time I looked at the document.

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- 1 Q. Are the notes dated?
- 2 A. No.
- 3 Q. As to when you created them I mean.
- 4 A. No.
- 5 Q. They do on occasion bear dates. And where
- 6 that's true, just to understand your method, that's
- 7 the date of the document?
- 8 A. Yes.
- 9 Q. Did the first batch of documents that you got in
- 10 November or December of last year relate to any
- 11 particular defendant company?
- 12 A. They were all four companies in the first batch.
- 13 Q. Of the notes that are here, can you estimate for
- 14 me the percentage of them that you got the
- 15 corresponding documents for in December, November of
- 16 1996, 50 percent, 40 percent, 80 percent?
- 17 A. Probably at least 50 percent, maybe 60 percent
- 18 in the first batch.
- 19 Q. And that 50 to 60 percent that came in the first
- 20 batch were reviewed by Christmas of 1996 or
- 21 thereabouts?
- 22 A. Well it would have been -- it would have been
- 23 first part of January. We didn't finish it up by
- 24 coming back to the university after the break, I
- 25 remember.

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1 Q. And then when did the second batch of documents
2 appear?

3 A. Well it would have been --

4 It would have been in January sometime. I
5 received smaller increments of documents from then
6 on.

7 Q. Continuously up to three weeks ago?

8 A. Yes.

9 Q. And as --

10 A. Intermittently.

11 Q. Yeah. And as for the batch --

12 As for the batch three weeks ago, there were
13 three binders. You looked at one, you haven't looked
14 at two; right?

15 A. Yes.

16 Q. And did you follow the same practice with
17 respect to the documents received since January; that
18 is, when you would review them, you would make notes
19 and the notes would go in the binder?

20 A. Yes.

21 Q. Did the documents received after January up
22 through three weeks ago cross the spectrum of the
23 four companies that are listed there?

24 A. I don't think I've received anything from
25 Lorillard except what was contained in the expert

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1 testimony of Dr. Hurt. He had a stack of documents
2 that came with his expert report, not expert
3 testimony, expert report, and there were some
4 Lorillard. And then I don't think I received
5 anything from Lorillard, but I've received some more
6 from the other companies.

7 Q. When you created the notes at or about the time
8 that you reviewed the documents, did you share the
9 notes with anyone?

10 A. No.

11 Q. When was the first time you provided the notes
12 to any attorney, or any subset of notes?

13 A. I think I've copied these once before. I'm not
14 sure about that.

15 You have a copy that I just did last Friday,
16 actually. I guess you have a copy. I gave two to
17 Mr. Nims. And I think once before that. But I can't
18 remember. It wouldn't have been more than once.

19 Q. So you made a copy last Friday --

20 A. Yeah. It would have been in February or
21 something like that I think I copied those.

22 Q. And who were they furnished to at that time in
23 February?

24 A. Mr. Nims.

25 Q. And the set --

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1 The two sets that were made last Friday, they
2 were furnished to whom?

3 A. Mr. Nims.

4 Yes, I do remember I copied those. In fact in
5 the deposition, the attorney that deposed me had seen
6 the report, so I remember January or February, it was
7 probably February, I copied the set of notes that I
8 had.

9 Q. The then-existing set.

10 A. Yes.

11 Q. And they were furnished to this lawyer that took
12 your deposition?

13 A. They were furnished to Mr. Nims.

14 Q. Ah.

15 A. But by the time she deposed me, she had seen
16 them. So --

17 Q. Well --

18 A. -- I obviously copied them.

19 Q. -- I've seen them, too. I can't tell you that
20 I've read them.

21 Were you aware of a court order requiring the
22 production of your notes at the time that you filed
23 your expert report?

24 A. Probably. I don't --

25 I mean when I first started taking the notes I

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1 wasn't aware that they would ever be produced for
2 anybody. But I'm sure I've come to realize that
3 pretty much anything I do that has to do with the
4 tobacco case, if asked for, I should provide it.

5 MR. NIMS: Let me make a statement for the
6 record so that there are no inaccuracies. I asked
7 Dr. Rowell to prepare his expert report for Minnesota
8 and he did. I was not aware that there was a
9 requirement that the notes be produced at the time of
10 his expert report, and I did not ask him to produce
11 the notes. The fault is not Dr. Rowell's, it is
12 mine.

13 THE WITNESS: When I'm asked to provide
14 something, I provide it. That's all I know.

15 Q. Well the court's order of March 13th, 1997
16 requires for expert witnesses that all notes,
17 handwritings, calculations, or other documents of any
18 kind or nature, existing at the time of the service
19 of the expert's report, prepared in whole or in part
20 for this matter by the expert or by others, be
21 produced. Were you aware of that at the time you
22 signed your expert report earlier this year on June
23 30th?

24 A. I guess not, or I didn't -- it didn't make a big
25 impression on me I guess.

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1 MR. SILBERFELD: Just so that we're clear,
2 we consider that a frank and rather serious violation
3 of the court's order. We'll take that up with the
4 court at the appropriate time.

5 MR. NIMS: I understand. I just want it to
6 be clear that the failure to know what was in the
7 court order was mine, it was not Dr. Rowell's.

8 MR. SILBERFELD: And on that same subject,
9 while this deposition is scheduled for two days and
10 we got these documents yesterday at 11:30 a.m., it
11 may not be possible to complete the deposition. I
12 just want to make you aware of that. I will make my
13 best effort, as I have all night last, to not only
14 prepare for the deposition but also get through the
15 document. But it may not be possible. I mean
16 there's -- there's fully 500 pages here, not all of
17 are readable, and it was written in pencil and then
18 copied multiple times. Some of it I note in the
19 original is also in red but didn't copy hardly at
20 all. So there are multiple problems with the
21 documents.

22 We do not intend to finish the deposition
23 without having an adequate opportunity to examine on
24 these points. We'll do the best we can as far as we
25 can get.

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1 MR. NIMS: Let me say two things. One,
2 various positions have been taken by both sides at
3 various depositions, and I'm not obviously fully
4 familiar with all of those and don't want to make any
5 commitments that are inconsistent with things that
6 have happened that I don't know about, but having
7 said that, I am mindful that you did not receive
8 those notes at the time you should have received
9 them. That is my fault. Obviously, you'll tell the
10 court whatever you wish to tell the court, but I
11 agree with you, subject to not making a commitment
12 that's inconsistent with the other situations and
13 other positions that both sides have taken, and I
14 believe you obviously should be entitled to an
15 opportunity to fully review the notes and ask the
16 questions that you want to ask about them. And if
17 that can't be done in 12 hours over these two days
18 and you have made your best efforts and it can't be
19 done, I'm certainly willing to agree to make the
20 witness available again if necessary to answer
21 questions about the notes. Because the fault that
22 you didn't get them when you should have got them is
23 mine for not knowing the order.

24 (Recess taken.)

25 BY MR. SILBERFELD:

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1 Q. Dr. Rowell, just before the break we were
2 talking about the process of document review that you
3 engaged in. Are all of the notes in the notebook
4 yours alone as distinguished from Dr. Carr's?

5 A. Yes.

6 Q. Did Dr. Carr make notes?

7 A. I don't know.

8 Q. You've not discussed that with him?

9 A. No.

10 Q. And you've not read any notes that he's made?

11 A. No.

12 Q. Was there, from the time you first got documents
13 from the tobacco companies themselves, late last
14 year, to the present, a dialogue or a continuing
15 dialogue with counsel about the meaning of the
16 documents or what they say?

17 A. Occasionally there have been some meetings about
18 that, I don't remember exactly how many, not -- not a
19 lot, --

20 Q. Okay.

21 A. -- about have I found anything, what importance
22 do I --

23 Q. Describe that part of the process to me.

24 A. It would just be a casual question, sometimes on
25 the telephone. When they send me some documents,

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1 they -- one of the attorneys or the other would -- in
2 another conversation would say, you know, have I read
3 the documents and have -- have I seen anything that's
4 startling or --

5 They've been really casual conversations more
6 than anything.

7 Q. Have you, in the course of your document review,
8 initiated any calls or meetings with counsel where
9 you had things that you wanted to ask or talk about
10 with reference to the documents?

11 A. I don't think so. I can't remember any that I
12 initiated.

13 Q. So in terms of capturing the universe of
14 contacts you've had with counsel about the documents,
15 there have been a number of contacts, some were
16 informal, sometimes by phone where they would call
17 and ask you how are you doing, are you finding
18 anything significant.

19 A. Yes. And when we've met in Louisville there
20 have been discussions on the documents also.

21 Q. How many meetings have there been in Louisville?

22 A. Again, about half a dozen this year probably.

23 Q. Roughly once a month?

24 A. I guess that's right. It may be less than that.

25 Q. And who has attended those meetings?

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1 A. Mr. Nims has been at all of them, Mr. Gale has
2 been at all or most of them, and Mr. McDonnell has
3 been at probably half of them.

4 Q. Who is Mr. McDonnell?

5 A. Alf McDonnell.

6 Q. Alf?

7 A. Alf, from Colorado.

8 Q. What's your understanding as to who he is?

9 A. He's with a law firm that represents Philip
10 Morris, I believe.

11 Q. He's an attorney.

12 A. Yes.

13 Q. Mr. Nims was at all the meetings, Mr. Gale at
14 some, Mr. McDonnell at some?

15 A. Yes.

16 Q. Anyone else attend these approximate six
17 meetings in the last eight months?

18 A. Early this year there were a couple of other
19 individuals that attended and almost didn't say
20 anything. I can't remember their names. They were
21 one woman I remember -- I don't know the names. And
22 then there was a Mr. Peterson, who may have been at
23 one this year since he was at the meeting when -- in
24 November when I got the stack of documents, and I
25 believe he represents Lorillard. And he may have

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1 been at another meeting since then, but only one
2 if -- if any more. I -- I haven't been in contact
3 with him very much, really, at all.

4 Q. And Mr. Peterson is a lawyer?

5 A. I -- I guess so. I mean --

6 Q. And the woman whose name you don't recall, is
7 she an attorney?

8 A. I think so. I don't know.

9 Q. Of all the meetings you've had from the time
10 that the first stack of documents was delivered to
11 you up to the present, have you named for me all the
12 people that have attended any or all of the meetings?

13 A. That I can remember. I really -- I think --

14 I'm trying to remember in that one meeting
15 whether -- the attorney, I can't remember her name --

16 Q. The woman?

17 A. There may have been another one there as well,
18 and which I don't remember the name or which firm
19 they were from.

20 Q. But they were a lawyer.

21 A. I guess so. Again, I don't --

22 We don't make formal introductions and "Are you
23 a lawyer?" I didn't ask the question, so --

24 Q. It's an important question, Dr. Rowell.

25 At any time in the course of your work, going

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1 all the way back to the historical-review onset in
2 1995, have you met with any other experts such as
3 yourself?

4 A. Well I mean I attend scientific meetings, but --

5 Q. I'm sorry. Bad question.

6 Have you met with any experts in the course of
7 or in the preparation of your expert work in the
8 litigation?

9 A. No.

10 Q. Have you talked to any by phone?

11 A. No.

12 Q. Do you know who the experts are on either side
13 in this case?

14 A. I know --

15 In this case I only know of Dr. Hurt as an
16 expert.

17 Q. There's a Dr. Amit, A-m-i-t. Do you know Dr.
18 Amit?

19 A. No, I don't.

20 Q. Have you ever spoken to Dr. Amit?

21 A. No.

22 Q. Do you know what his views are on the subject
23 he's going to testify about?

24 A. No.

25 Q. Do you know if they're consistent or

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1 inconsistent with your own?

2 A. I don't know who he is.

3 Q. Going back to the fall or early winter of 1996

4 when the stack of documents first arrived, the first

5 shipment, --

6 A. Right.

7 Q. -- that was incident to a meeting that was held?

8 A. Yes. They actually brought the documents with

9 them.

10 Q. "They" being Mr. Nims and others?

11 A. I think Mr. Nims, Mr. Gale, Mr. McDonnell and

12 Mr. --

13 Q. Peterson?

14 A. -- Peterson. I believe they all came with a

15 stack of documents in that early meeting.

16 Q. And tell me what the conversation was in that

17 first meeting.

18 A. "Here are the documents. This will be an

19 interesting project. You will be one of the first

20 non-attorneys to actually see the documents. These

21 are documents that the plaintiffs have identified as

22 containing important information. Would you look at

23 those documents and say whether you agree or disagree

24 that they contain important, new, novel information

25 that wasn't already known, and if so, would that have

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1 been of sufficient quality to have been published."

2 Q. In that meeting, were you told anything about
3 what the issues in the litigation were or what each
4 side was saying about various contested questions?

5 MR. GINDER: One moment.

6 (Discussion between Mr. Ginder and Mr.
7 Nims.)

8 A. Probably --

9 I don't think I've been told that, but I think I
10 read newspapers and I'm aware of the issues, but I
11 don't think they came out and told me what the issues
12 were. I don't remember. They may have.

13 Q. What was your understanding as to what the
14 issues were at the time you received the first
15 shipment of documents?

16 A. Well, I may have come to this conclusion myself,
17 they may have told me, I don't remember, but it is my
18 understanding that the allegation is made that the
19 tobacco companies had conducted research which they
20 expressed that, had it been published, would have
21 made a big difference in our understanding of
22 nicotine's actions in the brain.

23 Q. When you say would have made a difference, are
24 you referring to a difference of understanding as to
25 nicotine and its actions by the medical community?

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1 A. Yeah, which may have developed into a difference
2 in research direction or perhaps earlier findings
3 than were -- than eventually took place.

4 Q. The documents that were brought to you were ones
5 that counsel told you had been designated as
6 important or significant by the plaintiffs?

7 A. That's what I understood.

8 Q. How did that process occur, as far as you
9 understand?

10 A. I don't know how the process occurred. That's
11 just what I was -- that's where I was told that these
12 documents --

13 I was also told that there were many, many more
14 documents, I think I've heard millions of documents
15 actually, or millions of pages anyway, but that these
16 are ones that have been identified as important by
17 the plaintiffs. That was my understanding.

18 Q. But you didn't know at the time nor do you know
19 now what "important" means in that context?

20 A. Well this is related to nicotine.

21 Q. Yes, sir.

22 A. I'm sure there are other documents that have to
23 do with health issues that I'm not an expert on. But
24 as far as the actions of nicotine, important inasfar
25 as new information that wasn't already available, as

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1 I said, or would have made an important, significant
2 advance in our understanding of nicotine. So I was
3 concentrating on the effects of nicotine.

4 Q. Were you furnished each and all of the documents
5 that were regarded as, quote, important, close quote,
6 by the plaintiffs?

7 A. I have no way to know.

8 Q. Have you ever visited the Minnesota depository?

9 A. No.

10 Q. Have you asked to do that?

11 A. No.

12 Q. Why not?

13 A. Well I don't really have time. I'm involved in
14 a lot of things. I barely have time to get into the
15 documents I've gotten; I don't need to see any more.
16 I'm behind schedule, as I said, already.

17 Q. Seeing more documents wouldn't change your view
18 in any way?

19 A. I don't know that.

20 MR. NIMS: Objection.

21 Q. It might, it might not.

22 A. It might.

23 Q. Do you have an understanding as to what the
24 depository is here in Minnesota?

25 A. Not really. I guess that's the place where all

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1 the tobacco documents that have been discovered end
2 up. I don't know.

3 Q. In the course of any of your contacts with
4 counsel since November of last year when the document
5 aspect of your retention began, have you asked them
6 to run any searches or provide you with any documents
7 under their control on the subject of nicotine and
8 its actions?

9 A. No, except for those couple of instances where I
10 in the documents read a statement --

11 Q. About another document.

12 A. -- about another document. I think there were
13 three instances.

14 Q. Can you identify those three instances for us
15 easily, or would you have to go through every page of
16 your notes?

17 A. If I was in Louisville I would, because I have
18 them on one piece of paper. But --

19 Yeah, I don't think it would be very easy.

20 Q. Okay. Do you know what subjects those three
21 instances related to specifically, or what did they
22 say?

23 A. It's been a long time, but there was a statement
24 about nicotine's actions in a dog study or something
25 as I remember. That's the only one I can really

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1 remember. I don't even remember what company it
2 was.

3 Oh, yes, I do. It was Philip Morris, because I
4 asked Mr. McDonnell about it.

5 Do you want me to try to find it or -- I mean I
6 can. I just wasn't prepared to bring that paper with
7 me, so -- it would have been easy if I had.

8 Ah, I think this is one. Yes, here's one. It
9 was in document --

10 How do you want me to identify this? By --

11 Q. Well what does it say in the upper right-hand
12 corner there?

13 A. Okay. There was a Bates number 1001808384, and
14 on page three of that document it referred to report
15 034, "Experiments on Nicotine Habituation in
16 Animals," and that seemed like it would be an
17 interesting experiment to see what they had found on
18 nicotine habituation in animals.

19 Q. So that is an example of a document you
20 originally got that referred to another, --

21 A. Right.

22 Q. -- and you asked for the other document.

23 A. I said, "What is report 034? I would like to
24 see. That may be an important experiment."

25 Q. Did you get that document?

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1 A. No, that's one that they said they tried to
2 track down and could not.

3 So I have in here 028B, and I think that must be
4 the paragraph on page three where that statement came
5 from.

6 Q. Okay.

7 A. But I don't have the document with me, so --

8 Q. What else is back in Louisville, other than the
9 one piece of paper you referenced that comprises part
10 of your file in this action?

11 A. Well there are, as I say, a lot of the
12 scientific articles that are referenced in here. I
13 have the actual articles that are in the citations of
14 this historical review.

15 Q. Right.

16 A. And of course I have for a long time had a lot
17 of books and reviews and things like that, and I
18 think many of those didn't have anything to do with
19 the case, but I referred to them. I had them before
20 I started working on it. Then I have some
21 information that I'm starting to develop as we
22 progress for me to testify as an expert witness that
23 I've accumulated.

24 Q. Like what?

25 MR. NIMS: Objection. I think you're

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1 getting into areas where your experts have been
2 instructed not to answer on work-product grounds of
3 things that are in process.

4 MR. SILBERFELD: Well let's go off the
5 record for a second. We can talk about this.

6 (Discussion off the record.)

7 MR. SILBERFELD: Let's go back on the
8 record.

9 BY MR. SILBERFELD:

10 Q. Without getting into the subject matter now, for
11 now anyway, Dr. Rowell, there is work in progress
12 that is a part of your expert retention work?

13 A. Yes.

14 Q. Okay. And that work is contained in some notes
15 or papers or documents back in Louisville?

16 A. Yes.

17 Q. What else is back in Louisville, other than
18 articles that are the reference sources for the
19 historical review, books and so forth that you had
20 prior to your retention, notes and records relative
21 to work in progress? What else is back there?

22 A. I think that sums it up. I can't think of
23 anything else.

24 Q. You mentioned a piece of paper where these three
25 instances were written down where you'd asked for

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1 more documents. What's that piece of paper?

2 A. I think it's just one piece of paper where I was
3 going to check off when I got those three things.
4 I'm --

5 From memory I'm trying to remember the piece of
6 paper, and I think I still have that piece of paper,
7 and it was the three instances where I had requested
8 additional information, the one example I gave you,
9 and there are two others.

10 Q. As to the other two, did you get the requested
11 document? We know you didn't get the first one.

12 A. I didn't get the one I gave right there.

13 Q. Right.

14 A. I think I did get one of the other ones, and it
15 was completely inconsequential. And I can't remember
16 the -- I don't even remember what they were about
17 now. It's been --

18 I identified those over the Christmas break.
19 They were in the original documents I got. And I
20 made those notes over Christmas and followed up in
21 January and asked about them, and I haven't really
22 thought about it since.

23 Q. Have you been given anything in writing by any
24 lawyer for any tobacco company at any time, whether
25 it's a cover letter or a check or a substantive

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1 document?

2 A. Well you had a lot -- any document, any cover --

3 Yes. I mean I've been given things by --

4 that --

5 From attorneys?

6 Q. Yes, sir.

7 A. Yes.

8 Q. What have you been given?

9 A. Well you mentioned cover letters. I've gotten

10 cover letters to some of the things I've gotten.

11 I've gotten some information from other witnesses

12 that have -- and they again may have to do with my

13 testimony, and I don't know whether I should -- I

14 mean they're not from --

15 Well I got them from the attorney, but they're

16 not from the attorneys, they are from the expert

17 witnesses, in one case, and I've gotten the

18 depositions of two individuals in other cases.

19 Q. Anything else?

20 A. I don't think so, other than the documents.

21 Q. Thank you.

22 I just wanted to make sure that we cover the

23 universe of the categories of things that you have

24 about this case. You've told us about the documents,

25 you've told us about the underlying articles to the

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1 historical review, books and reference materials, the
2 one piece of paper, the materials that were
3 generically described, for now, as the
4 work-in-progress materials, cover letters, witness
5 information about other witnesses, and the
6 depositions of two people. Is there anything else?

7 A. I can't think of anything else.

8 Q. Where are the cover letters that you received?

9 A. They're with the documents that they came with.
10 I mean they're sometimes rubberbanded on the outside.

11 Q. And they would reflect the date that they were
12 either delivered or sent?

13 A. Probably.

14 Q. And those are back in Louisville?

15 A. Yes.

16 Q. And the other witness information which you
17 received, what is that about? Who is that?

18 A. I received a videotape, and that's back in
19 Louisville. That's the only thing I can think of
20 that's what I -- what I would put into the category
21 of witness information.

22 Q. And who is that concerning?

23 A. That was a fellow named Ciraulo, Dr. Ciraulo.

24 Q. And did you watch the video?

25 A. Yes.

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1 Q. And what did you understand Dr. Ciraulo to be
2 testifying about?

3 A. The --

4 Q. I take it it was testimonial in nature?

5 A. Yes.

6 Q. Video deposition or trial testimony?

7 A. Yes.

8 Q. What was it about?

9 A. It was about the actions of nicotine in the
10 brain, his conception of how it worked. Basically
11 neurophysiology is what it was.

12 Q. And what action or case was he testifying in, do
13 you know?

14 A. I think it was a Florida case, but there have
15 been a couple and I don't know.

16 Q. Do you know if he was testifying for the
17 plaintiff or for a tobacco company?

18 A. For the defense.

19 Q. And you've been provided the depositions of two
20 people?

21 A. Yes.

22 Q. Who are they?

23 A. Dr. Neil Benowitz.

24 Q. And who else?

25 A. And Dr. Jack Henningfied. I think if I have

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1 his. I have not read his.

2 Q. You've read Dr. Benowitz?

3 A. I've read Dr. Benowitz. But I think I have Dr.

4 Henningfield's is the one -- the other one, I'm

5 pretty sure.

6 Q. And what case were they deposited in?

7 A. I can't remember.

8 Q. Is Dr. Benowitz's testimony helpful to you in

9 any way in forming any opinions you're going to

10 express?

11 A. It gave me some information of what he was

12 thinking about and what his ideas were. I mean I

13 know Dr. Benowitz's work and I know what his

14 interests are, and so in that respect I was familiar

15 with a lot of the things he said. But there were a

16 couple of instances that he brought some things out

17 that I wanted to check on. He -- he gave depositions

18 at two cites on two different dates, so I have really

19 two things from him.

20 Q. And he testified about nicotine and addiction?

21 A. Yes.

22 Q. And can you summarize his views?

23 A. His views are very generally that it is the

24 pharmacokinetic characteristics of cigarette smoking

25 which make the delivery of nicotine from cigarettes

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1 different from any other way you could give nicotine,
2 and therefore you could consider cigarette smoking a
3 drug-delivery device for nicotine addiction, whereas
4 you couldn't demonstrate nicotine to be addicting by
5 any other route.

6 He does a lot of the pharmacokinetics on how
7 fast it gets to the brain. He in the deposition
8 talked a little bit about pH effect of cigarette
9 smoking, which of course I've read some of that
10 information as well, and very briefly, I think on
11 some of the tobacco documents, information that was
12 in the documents. And I don't know which ones he'd
13 read, but --

14 Q. Had you finished?

15 A. Yes.

16 Q. Okay. As to the substance of his views, do you
17 disagree or agree with those views?

18 A. I disagree.

19 Q. Why?

20 A. Because I think you could deliver nicotine, pure
21 nicotine by inhalation or by intravenous injections
22 or in other ways that you could have rapid pulsatile
23 delivery to the brain. I don't think nicotine should
24 be considered this unique drug that's the only one in
25 the world that you have to give in a cigarette, and

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1 that if you don't give it in a cigarette, you can't
2 demonstrate any dependence potential. So I disagree
3 with him in that respect.

4 I do agree that it is delivered rapidly from
5 cigarettes.

6 Q. Directly to the brain.

7 A. Well directly to the body. It's the brain --

8 Q. And the brain.

9 A. And the brain.

10 Q. And the peripheral nervous system.

11 A. Right.

12 Q. What are Dr. Benowitz's views on pH? Can you
13 just summarize those briefly for me?

14 A. Well I probably agree with him that pH can make
15 a difference on the delivery of nicotine from the
16 tobacco to the smoke. I think he talked about that
17 some in his deposition. I'm not sure how he comes
18 down on the difference pH makes on the absorption of
19 nicotine in the lungs to the rest of the body, so I
20 don't -- I can't remember what his views are.

21 Q. Have you seen tobacco company documents that
22 reference adjustments to pH?

23 A. Yes.

24 Q. And can you summarize what those documents say?

25 A. Those documents in summary are attempting to

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1 change the tar/nicotine ratio by really using less
2 tobacco in the product, or, in some cases, putting a
3 higher-yield nicotine or in some cases changing the
4 pH to try to deliver more nicotine or the same amount
5 of nicotine with less tobacco, is how I see it.

6 Q. And does that have any meaning for you in terms
7 of the importance of nicotine in cigarettes?

8 A. Well I don't deny the importance of nicotine in
9 cigarettes, and I think tobacco companies realize the
10 importance of nicotine in cigarettes. They were
11 trying to -- they are trying to probably both control
12 the nicotine to a certain level and to change the
13 tar-to-nicotine ratio.

14 Q. To reduce the tar while maintaining the nicotine
15 level?

16 A. That's my read on it. Because I don't see any
17 indications that it's advantageous to increase the
18 nicotine. That's quite easy to do. And most of the
19 time it's trying to change that ratio rather than
20 trying to deliver more nicotine.

21 Q. And did you understand from your review of the
22 tobacco documents that there were distinct
23 disadvantages to lowering nicotine incident to
24 lowering tar?

25 MR. NIMS: Objection.

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1 A. Beyond a certain point that's probably true.
2 They have been able to lower nicotine satisfactorily
3 over a long period of years with no apparent
4 detrimental effect to the cigarette smoker or number
5 of people who smoked, but I'm sure they realize that
6 nicotine is -- well I assume they realize that
7 nicotine is -- a certain amount is going to be
8 important for a satisfying product. And if they made
9 a very-low- or no-nicotine cigarette, it would not do
10 well in a competitive marketplace with other products
11 that had nicotine in it, a certain amount of nicotine
12 in it.

13 Q. And when you say "satisfying product," what do
14 you mean?

15 A. A product that consumers found acceptable and
16 wanted to purchase.

17 Q. For its nicotine effects.

18 MR. NIMS: Objection.

19 A. For its overall effect.

20 Q. But to the extent --

21 I'm sorry, you hadn't finished.

22 A. A certain amount of nicotine is contributing to
23 its overall satisfying effect.

24 Q. Okay.

25 A. I think that's pretty clear. Because if you

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1 give them a choice between no-nicotine cigarettes, as
2 well as they can make those, and I'm not sure how
3 they can make those without changing the other
4 composition, I'm not a manufacturing expert, but
5 assuming they could make an identical cigarette with
6 no nicotine, I'm fairly confident that that would be
7 judged less satisfactory than a cigarette that had a
8 certain amount of nicotine in it.

9 Q. From all that you've seen, is nicotine and the
10 level of nicotine in cigarettes at least a
11 substantial factor in a smoker's satisfaction level
12 about the overall smoking experience?

13 A. Yes. It's a significant part of the smoking
14 experience.

15 Q. Okay. You mentioned also that you had a
16 deposition from Dr. Henningfield. You haven't read
17 though that though; right?

18 A. I haven't read it. I think I have it.

19 Q. Let me back up to Dr. Ciraulo.

20 Dr. Ciraulo from a neurophysiology standpoint
21 spoke about in his deposition videotape the actions
22 of nicotine?

23 A. Yes.

24 Q. Can you summarize his views?

25 A. No, really I can't, because his -- the videotape

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1 didn't really go into his views. It was
2 more of a tutorial on how nicotine worked and how it
3 releases neurotransmitters. And -- and then he went
4 into PET scans, which I guess is his area of
5 expertise, which wouldn't be something that I would
6 be a very good expert on testifying about. But the
7 first three-quarters of the videotape was things I'm
8 very familiar with, and -- but it didn't really
9 discuss what his views were.

10 Q. Generally speaking, do you agree with Dr.
11 Ciraulo's tutorial presentation, to the extent it's
12 in your area?

13 A. Generally, yes.

14 Q. To the extent that he on that video spoke about
15 PET scans, I take it that related to the use of PET
16 scans as diagnostic tools?

17 A. Yes, for --

18 Well not really diagnostic tools. PET scans
19 have been used to try to compare what happened at
20 what parts of the brain with nicotine delivery, so
21 it's more of an experimental tool. He had some parts
22 of that video that were on that.

23 Q. I jumped to the conclusion that the videotape
24 was a deposition or some form of testimony. It was
25 not, then. Dr. Ciraulo's video was not.

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1 A. I think it was part of some testimony.

2 Q. Oh.

3 A. I don't know.

4 Q. What was the tutorial part of it? Were there

5 different parts of the video?

6 A. No, it was all one video, but it was a tutorial,

7 I guess trying to educate a jury, assuming it was

8 used in trial, on how nicotine would work so they

9 would understand, when he talked about

10 neurotransmitters and things like that, what nicotine

11 did.

12 Q. You've read at least the report of Dr. Hurt;

13 have you not?

14 A. Yes.

15 Q. Have you read his deposition as well?

16 A. No, I don't think so.

17 Q. Have you looked at any other expert reports or

18 expert testimony by anyone other than what we've

19 talked about now?

20 A. I think I read Dr. Carr's expert report or

21 briefly looked at it.

22 No, I did read it. I did read it. Because I

23 remember I looked at it before I wrote my expert

24 report. And so I -- I don't know what case that was

25 in, but he had written an expert report. Other than

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- 1 that, I don't think I've read anybody's.
- 2 Q. Dr. Carr has been designated as an expert in
- 3 some case?
- 4 A. Yes.
- 5 Q. Which one?
- 6 A. I think again this was another Florida case.
- 7 And I think he's been designated in a Pennsylvania
- 8 case.
- 9 Q. What was your purpose in reading his expert
- 10 report before writing your own?
- 11 A. I was curious about how --
- 12 I had not written an expert report before, and I
- 13 was curious how his looked. I -- I don't think it
- 14 made too much of an impact on mine, but I did read it
- 15 before I wrote mine.
- 16 Q. In terms of the documents that you've been
- 17 provided by counsel, they relate to four tobacco
- 18 companies.
- 19 A. Yes.
- 20 Q. You're aware there are others.
- 21 A. Yes.
- 22 Q. Have you asked for any documents from any
- 23 company other than these four?
- 24 A. No.
- 25 Q. Do you have an understanding as to why you've

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1 gotten documents only from these four?

2 A. Well as I said, my understanding is that I'm
3 looking at documents that the plaintiffs have
4 identified as important documents. I haven't really
5 taken upon myself to really want to look at all the
6 documents or a lot more documents, and so I haven't
7 really asked for any more except for those three
8 instances I talked about. And so whatever I'm
9 provided, I review. So I haven't really asked for
10 anything.

11 Q. So it's your understanding as you sit here today
12 that at least the plaintiffs in this case don't
13 regard documents from any other tobacco company other
14 than these four as important or significant?

15 A. I don't know.

16 Q. Have you at any time been provided any sort of
17 litigation overview by counsel, either orally or in
18 writing?

19 A. No. If I understand your question, I guess
20 you're saying -- by "overview," you mean how it would
21 progress and when the testimony would occur if it
22 occurred, or --

23 Q. Well actually more substantive than that, things
24 like what the case is about, what the claims are that
25 are being made, and so forth.

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1 A. Well again, I'm familiar with it as far as
2 reading the paper. I don't -- I haven't been
3 provided any other insights by the attorneys that I
4 wouldn't have already known or figured out.

5 Q. Have you been shown the complaint in this case,
6 the document actually filed with the court that forms
7 the basis of the claims being made?

8 A. No. I signed the confidentiality agreement,
9 which was a big, long thing. The cover page had
10 Humphrey versus so and so. But I don't know what the
11 complaint is. I guess I haven't seen the complaint.
12 I'd have to see it to tell you whether I've seen it
13 or not.

14 Q. Let me show you a copy of the amended
15 complaint --

16 A. Okay.

17 Q. -- that bears the date November 25th, 1996.
18 Have you seen that document before?

19 A. I don't think I have, but this might --

20 I don't think I've seen this. I remember the
21 confidentiality agreement had a big stack on it, but
22 I don't think it was that.

23 Q. Can you estimate for me the total number of
24 hours that you've spent in connection with both the
25 historical review work and the document review work

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1 including meetings with counsel and so forth?

2 A. Okay. I'm guessing at three, four hundred
3 hours, including the review work.

4 Q. With regard to the document review that you
5 conducted, what was your practice with respect to
6 those documents? Did you read every line of every
7 page, or did you scan them, try to get a sense of
8 them and the substance of them?

9 A. No, I --

10 Q. Tell me how you went about it.

11 A. I read every line of every page. I started the
12 first page and went to the end of that document.
13 Some of the documents I got were rubberbanded
14 together and they weren't really stapled in any
15 specific things, so that I in many cases went back
16 and stapled those together, those individual
17 documents, just so it would be easier to organize.
18 And I would take a piece paper out and I would start
19 and I would read from the beginning, and when I came
20 to a part that looked important or interesting, I
21 would make a note. At the end of it I would usually
22 have a kind of a conclusion about whether there was
23 really anything important in there or not so I
24 wouldn't have to go back and look at it again. Some
25 of the documents I -- when I first started this, I

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1 actually thought I would go back and read again
2 carefully, but I really haven't done that on too many
3 of the documents.

4 Q. Was it part of your practice of reviewing the
5 documents to make any marks or notations on the
6 documents themselves?

7 A. No, I made no notes or any kind of marks on the
8 documents.

9 Q. No highlighting?

10 A. No highlighting.

11 Q. Marginalia?

12 A. No.

13 Q. So that I can understand the process, would you
14 be so kind as to pick a note about a document that
15 you think is representative of what you did and let
16 me find the same single piece of paper in my stack.

17 A. Oh, you have the same stack?

18 Q. I hope so.

19 A. Okay. Well --

20 MR. NIMS: I hope so also.

21 A. -- we can go to the very first one.

22 Q. All right. The first one in my stack says
23 "B.A.T." in the upper left-hand corner.

24 A. Uh-huh.

25 Q. And on the right-hand side next to a Bates

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1 number it says "Doc 726." Are we on the same page,
2 doctor?

3 A. Yes.

4 Q. All right. With reference to this, tell me what
5 you did, what the significance of these notes is.

6 A. Okay. I would start out, I'd write down the
7 company on the left-hand side as you see, the date,
8 if I could identify it, on the right-hand side. At
9 the time I started I wasn't writing the Bates numbers
10 down, which later on turned to be -- turned out to be
11 important. Because as I read so many documents, I
12 couldn't remember sometimes whether I'd --

13 I got duplicate documents sometimes in different
14 stacks, and so it would occur to me that I'd seen
15 this before. And later on, something we haven't
16 talked about, I put together a list of the documents
17 I read --

18 Q. Yes, sir.

19 A. -- which I can now refer to by the Bates number
20 and say I have read that. And now I can find the
21 document in here because these are sorted by Bates
22 numbers. So I've spent some time trying to organize
23 this large amount of material. So the Bates number
24 was added later on this particular one.

25 And then I put the title on there. And when I

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1 could identify who wrote it, I would put "by"
2 underneath that. And then that would kind of be the
3 top line. And then I'd just write down my thoughts
4 about what was in there. In this case -- I guess you
5 have the same one I do -- this was a short meeting
6 reviewing B.A.T.'s thoughts and projects on
7 nicotine. I guess the thoughts were on MAD HATTER,
8 HIPPO, ARIEL, et cetera. "Nothing here." I put that
9 on a lot of documents. What that means to me is that
10 there's nothing that would have constituted a
11 breakthrough in information, there was no research,
12 there was no data. And most of the documents I read,
13 they were not research articles, would not have been
14 publishable; they were thoughts, comments, marketing
15 documents, a lot of the things I looked at. So when
16 I say "Nothing here," it doesn't mean that there is
17 nothing in the documents; there's nothing as far as
18 my charge or my goal that I read the documents for.
19 Q. All right. So let's just stick with this one --
20 A. Yeah.
21 Q. -- and see if I understand the process.
22 This particular document was about a conference;
23 right?
24 A. It looks like it was a conference, yes.
25 Q. And is the name in the box, "Comments on

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- 1 Nicotine," the title of the document?
- 2 A. Yes.
- 3 Q. Okay. And the next three lines on this page are
- 4 your summary of what the document in fact says --
- 5 A. Right.
- 6 Q. -- or is about; correct?
- 7 A. Right.
- 8 Q. It was a short meeting reviewing B.A.T. thoughts
- 9 and projects on nicotine.
- 10 A. Uh-huh.
- 11 Q. Yes?
- 12 A. Yes.
- 13 Q. Among the projects talked about at the meeting
- 14 were MAD HATTER, --
- 15 A. Yes.
- 16 Q. -- HIPPO, ARIEL --
- 17 A. Yes.
- 18 Q. -- and others.
- 19 A. Yes.
- 20 Q. And then the last line that is, quote, Nothing
- 21 here, close quote, is really your assessment of the
- 22 document.
- 23 A. Relating to what I was looking for.
- 24 Q. The two questions.
- 25 A. Yes.

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1 Q. Is what's in the document important

2 scientifically, and is it publishable.

3 A. Right.

4 Q. Were those the only two questions you asked

5 yourself about each of these documents?

6 A. Those were the only two questions that I -- I

7 asked myself to really define on the end of every

8 document. But I made notes on other documents where

9 there would be interesting quotes. Even though they

10 weren't a research document, would not have been

11 publishable, I would very often write down things in

12 quotes.

13 The next document is an example where I have a

14 lot more information, "Fate of Nicotine in the Body,"

15 there I have who it's by, the date, I've got some

16 pages. It went through absorption, distribution,

17 elimination, a discussion. There were some quotes

18 there. "Page 14 under distribution rate is rapid

19 after smoking. Concentration close to that observed

20 after IV - a few minutes." Then on page 15, "High

21 accumulation in the brain," and I have my own

22 comment, "This supports the earlier work of

23 Schmitterlow and others."

24 Q. Uh-huh.

25 A. So --

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- 1 Q. Well let's do this, since the second page --
- 2 And is the second page all by itself about one
- 3 document, or does it go a little bit to the next
- 4 page?
- 5 A. It says "Over," but I can't --
- 6 I don't think I did anything on the over. I
- 7 have "Slade" and a question mark on the back of my
- 8 copy, which you probably don't have. But --
- 9 Q. Where does yours say "Over?"
- 10 A. Right on the very bottom. I bet that didn't
- 11 come out on the xerox machine. Yeah, it's right down
- 12 there; you have a little tiny mark. These xerox
- 13 machines chop off a tiny bit sometimes on the bottom
- 14 and top margin.
- 15 Q. And then the next page on my set has a two at
- 16 the top --
- 17 A. Yes.
- 18 Q. -- but a wholly different date.
- 19 A. Yes. That's a different document.
- 20 Q. All right. And you got the original; right?
- 21 A. Yes.
- 22 Q. On the back of the May '63 document, --
- 23 A. Uh-huh.
- 24 Q. -- is there something on the back?
- 25 A. It says "Slade" with a question mark.

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- 1 Q. And is that the only thing?
- 2 A. That's the only thing it says on mine.
- 3 Q. Okay.
- 4 A. I tried to keep these on one page since it's
- 5 easier for me. I don't remember why. This is the
- 6 only one. I don't remember doing that at all. But
- 7 this is the first or second document I reviewed; it
- 8 was very early on. I remember that "Fate of Nicotine
- 9 in the Body" document.
- 10 Q. Well maybe this is a better representative
- 11 example at least to talk about so I can understand
- 12 the process that you went through --
- 13 A. Yeah.
- 14 Q. -- than the first one.
- 15 A. Yes.
- 16 Q. The first one was not terribly significant.
- 17 A. Uh-huh.
- 18 Q. Is that fair?
- 19 A. Uh-huh.
- 20 Q. This is a B.A.T. document in May of 1963; right?
- 21 A. Yes.
- 22 Q. That talks about the "Fate of Nicotine in the
- 23 Body." Is that the title?
- 24 A. Yes.
- 25 Q. And it is by these two individuals, Haselbach or

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1 a Maselbach and Gessichter --

2 A. Yes.

3 Q. -- or Geissbahler?

4 A. Yes.

5 MR. SILBERFELD: Spelled just like it
6 sounds, Dick.

7 THE WITNESS: I couldn't spell it even by
8 looking at my writing here. Luckily, I mean, I have
9 these documents, so I can go back if I need to.

10 MR. SILBERFELD: Certainly.

11 Q. And they're affiliated with Battelle?

12 A. Yes.

13 Q. All right. And here again, parts of this piece
14 of paper represent your summary of what's actually in
15 the document, and some of it is your editorial
16 comment or your opinion about whether it's a
17 significant piece of paper and whether it's
18 publishable.

19 A. Yes.

20 Q. All right. The first two or three lines there
21 talks about absorption --

22 A. Yes.

23 Q. -- of nicotine.

24 A. Yes.

25 Q. And at page five of the document it talks about

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1 the percentage absorption of nicotine from cigarettes
2 as being 20 to 90 percent.

3 A. Yes.

4 Q. And then at page six it talks about the amount
5 drawn into the mouth as being one to five milligrams.

6 A. Yes.

7 Q. Do you see that?

8 A. Yes.

9 Q. And then you have a note there that says "Wide
10 variation."

11 A. Yes.

12 Q. What do you mean by that?

13 A. Well I think 20 to 90 percent pretty much covers
14 the whole range of --

15 That's a lot of variability, I would consider,
16 on a percentage absorption from a cigarette.

17 Q. The very next line in the margin note of your
18 piece of paper is -- I can't read what it says.

19 "Dist," D-i-s-t?

20 A. It says "Dist," but that means to me
21 distribution.

22 Q. Distribution of what?

23 A. Of nicotine in the body, where it goes when it's
24 taken in.

25 Q. So is that the general subject matter being

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1 discussed?

2 A. Without seeing the document, I'm guessing that
3 they broke this down themselves into these --

4 Q. Okay.

5 A. -- subchapters.

6 Q. And then you write "Nothing very relevant
7 here." Right?

8 A. Yes.

9 Q. Does that refer back to the distribution part of
10 the document or the absorption part of the document
11 above?

12 A. The way it's written, I'm guessing it applies to
13 the distribution part of the document.

14 Q. Okay. Do you have an assessment, as to the
15 absorption part of the paper, as to whether or not
16 that was scientifically important information? In
17 May of 1963, of course, when it was written.

18 A. My observation it is not particularly
19 scientifically interesting. There's a small number
20 of N there, N of 10; there's a wide variability; I
21 don't know what it would mean if you say nicotine is
22 absorbed from 20 to 90 percent.

23 I've got "21 to 95 percent, Table 1." I don't
24 know whether that came out on yours a little bit. So
25 there's probably a table in there. I don't know

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1 that --

2 When I look at this I say is this interesting,
3 interesting to the scientific research community, not
4 is this interesting to a manufacturer of cigarettes.
5 I mean that could be interesting to somebody who is
6 trying to manufacture a cigarette product, but it's
7 nothing new about nicotine. It doesn't have anything
8 to do with nicotine pharmacology, how it works in the
9 brain, what it does. So in that respect I wouldn't
10 consider that any novel finding on nicotine.

11 Q. As of May of 1963.

12 A. Yes.

13 Q. Put another way, whatever information this
14 absorption pair of lines provides about nicotine
15 absorption or the amount of nicotine drawn into the
16 body or the mouth by a cigarette was, in your
17 judgment, well known by May of 1963 in the world
18 medical literature; right?

19 A. No, I don't know that. I just say I'm not sure
20 that's a novel finding. There are a lot of things
21 that the tobacco companies knew about manufacturing
22 cigarettes and about nicotine in cigarettes and
23 things like that that really know one would have, I
24 might say, been interested in, I mean because it
25 wasn't --

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1 People knew that there was -- nicotine was
2 absorbed from cigarettes, so that's not a new
3 finding. The percent absorption here is quite
4 variable. There are only 10 people. I'm surprised
5 even with 10 that there's that big a range.

6 I'm not saying that it's not new information,
7 I'm just not -- I'm saying that it's not anything
8 that I could see making any difference to anybody had
9 they had that information. I mean every little bit
10 of -- every little experiment that's done provides
11 information to somebody. Almost anything you do
12 would provide something.

13 Q. And that's true --

14 A. Some data.

15 Q. And that's true in all science and all medicine.

16 A. Pretty much, yeah.

17 Q. So that every experiment, every finding is a
18 building block towards more knowledge.

19 A. Yes. But is it significantly -- is it of
20 significant value that it would have made any
21 difference by itself? I mean even -- even an
22 experiment that goes wrong provides some information
23 to somebody.

24 Q. And in making these assessments about whether
25 these documents are important scientifically, I take

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1 it you used the mindset that existed at the time the
2 document was written in order to measure the
3 significance of the document.

4 A. I think --

5 I tried to, because I had looked at the
6 literature back at that time to see what was known
7 about the absorption of nicotine, the distribution of
8 nicotine. That's what I did on the historical
9 review. When I went back and started looking at
10 these, I was familiar with as much as I could the
11 mindset in 1963 of what they knew about nicotine.
12 And that's obviously a little bit hard to do because
13 we know a lot more about it now. So I'm trying to
14 subtract knowledge and say would that have really
15 made a big difference. But to me it wouldn't have.
16 I mean you -- I guess what you're asking is --

17 In a way it is true every little thing you do
18 provides a little bit of information, but is it
19 reasonable to assume that every little thing that a
20 company does, whether it's the tobacco company or any
21 other company that's in a competitive industry,
22 publishes everything they do on their product even
23 though it does provide information to them, and I
24 would think that would be unreasonable. Obviously
25 we've got millions of pages of documents. Where is

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1 that going to be published? I mean --

2 Q. Well would you agree with me that a manufacturer
3 of a product, any product, knows more about that
4 product than anyone else?

5 MR. NIMS: Objection.

6 A. I would assume they know a lot about their
7 product. I don't know about more than anybody else.
8 But as far as making the product and trying to make
9 that product the best way they can to sell the
10 product, they're probably doing the best they can.
11 If they -- if they thought they could do better,
12 they'd probably try to do better.

13 Q. A manufacturer would know more about the
14 characteristics of its product than anyone outside
15 the company; true?

16 A. In an overall sense. I'm not sure the
17 manufacturer, particularly from reading these
18 documents, understands sometimes the science behind
19 the characteristic.

20 There are some statements in here that I just
21 don't agree with. They make some flat-out statements
22 about the effects of ammonia on absorption through
23 the lung and things like that which I think they have
24 no evidence or data. They think they know sometimes
25 what they are talking about, but since there's no

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1 research and data, they're just making the
2 statements. So in a --

3 Down at the molecular level, I'm not sure they
4 understand everything about their product, but in an
5 overall sense they probably understand a lot about
6 manufacturing the product. And I think that's
7 probably true with most industries.

8 Q. Including the tobacco industry.

9 A. Including the tobacco industry.

10 Q. If there's no notation about this particular
11 page we're talking about, the two lines on
12 absorption, if you've not written anything like "This
13 is really important" or "There's nothing relevant
14 here," what does that mean?

15 A. I wouldn't try to read anything into that. I
16 mean I just -- I'm not saying that it's important,
17 but then I'm not saying that it's not important. I'm
18 not saying that nothing is here. I didn't write
19 "Nothing here" on everything. I mean that is --
20 that is some information. I wrote it down. It
21 obviously was some actual data which was in most
22 cases very hard to come by with all these documents
23 that I've read, to actually see some numbers, so when
24 I saw some experiments done which had data, I was
25 impressed, you could say, for 95 percent of the

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1 documents that I saw didn't have any experimental
2 data at all. So I did write that down, I guess.
3 It's interesting; I wouldn't say it was important
4 that they had done that experiment.

5 Q. As of May of 1963, was it known in the
6 scientific and medical literature that the percentage
7 of absorption of nicotine from a cigarette could be
8 measured?

9 A. I don't know the answer to that question.
10 I'm -- I'm assuming it was known that it could be
11 measured at that time. People had measured
12 absorption by bioassay methods. As the nicotine came
13 out, they would put it on a heart preparation or
14 something like that and measure bioassay. But I
15 don't know how accurate those methods are.

16 Q. Well this is measured in humans.

17 A. Right.

18 Q. Was it known in May of 1963 or thereabouts that
19 the percentage absorption of nicotine in humans could
20 be measured by the method used by the Battelle
21 Institute here?

22 A. Well I'm sure it was known that it could be
23 measured. I don't know whether it was measured in
24 any other study before this in humans.

25 Q. So this might have been a significant finding,

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1 it might not have been, you just don't know one way
2 or the other.

3 MR. NIMS: Objection.

4 Q. I don't think it was a significant finding.

5 As far as the matter of whether, you said, could
6 it be measured, did they know that, I'm sure they did
7 because radioactive nicotine was available at that
8 time, that they could have done the experiment.

9 Q. Had it been done to your knowledge?

10 A. I don't know. I don't think so in humans.

11 Q. Lastly -- we'll take a break in a minute,
12 stretch -- was it known in May of 1963 what amount of
13 nicotine was drawn into the mouth from cigarettes in
14 the world scientific literature as distinguished from
15 company documents? Was that known?

16 A. I don't know, but I'm guessing that they would
17 have been -- if experiments were done -- I don't --

18 I don't know. That's such a big range that it's
19 almost meaningless to me. I mean if you had asked
20 somebody what the percentage absorption is of
21 nicotine, if you asked any scientist, they would have
22 hit in there somewhere.

23 MR. SILBERFELD: Let's take 10.

24 (Recess taken.)

25 BY MR. SILBERFELD:

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1 Q. We were looking, Dr. Rowell, at this document,
2 "Fate of Nicotine in the Body" in May 1963. Again
3 solely for purposes of trying to understand your
4 methodology and note-taking and the notations that
5 you've made, there is another section that begins
6 with the designation page 14. Do you see that, sir?

7 A. Yes.

8 Q. Does that refer to distribution?

9 A. Yes.

10 Q. All right. So that this section here that has
11 distribution in the left-hand margin consists really
12 of three lines. Is that a fair characterization of
13 it?

14 A. Yes, that looks -- that looks right.

15 Q. And at page 14 the statement is made, "It is
16 rapid after smoking?"

17 A. Right. "Concentration close to that observed
18 after IV."

19 Q. And --

20 A. "A few minutes."

21 Q. And you regard that information as not a new
22 finding, nothing significant medically or
23 scientifically?

24 A. I think that's right. Because that would --

25 That was already known, that it was rapid after

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1 smoking.

2 Q. At page 15 under the same section about
3 distribution there's a notation, quote, "High
4 accumulation in brain."

5 A. Yes.

6 Q. Do you see that?

7 A. Uh-huh.

8 Q. And you, I think, wrote there the editorial
9 comment, if I characterize it correctly, "This
10 supports earlier work by," and then please give me
11 the authors.

12 A. Schmitterlow, S-c-h-m-i-t-t-e-r-l-o-w, and
13 others. That's what it says.

14 Q. When was the work of Schmitterlow and others
15 done?

16 A. That was about the same time, early '60s.

17 Got some references in here.

18 Q. You're now referring to the historical review?

19 A. Right.

20 Q. Give me a page number when you get there; would
21 you?

22 A. Okay. Okay. Page five, in talking about 1950,
23 they used radioactive nicotine in mice and the brains
24 contain the highest level of examined immediately
25 after administration, which goes along with this

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1 saying it's high accumulation in the brain. Then --

2 Q. Let me just ask you: Is this report, "Fate of
3 Nicotine in the Body," May of 1963, in humans?

4 A. Yes.

5 Q. All right.

6 A. And let me see who the second author is. An
7 Applegreen --

8 Yes, Applegreen was with Schmitterlow and
9 Hanson, I thought so. So they started doing these --
10 that was in '62 when Schmitterlow used his radiolabel
11 technique and found -- I think that's an incorrect
12 notation, I've got in my review here a little pencil
13 mark, they found blood/brain ratios of about four
14 within five minutes of IV nicotine in mice. I think
15 that should be brain/blood ratios. And I want to
16 check that.

17 Q. In other words, just reverse the words there?

18 A. Yes. I think --

19 I mean I noted this when I read it, --

20 Q. Okay.

21 A. -- that the brain levels are higher than the
22 blood, so it should be brain to blood levels of
23 four.

24 And then they did whole-body radiography, the
25 same group, in '62, and then another paper in '65

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1 showing the brain levels were highest within five
2 minutes. So the fact that it goes to the brain
3 quickly in concentrations was known, but this was in
4 humans. So I don't think you would expect it to be
5 different, but that was what was found in this paper,
6 that there was also high accumulation in the brain.

7 Q. At least some of the work done by Schmitterlow
8 after this time in 1963 was done in 1965, according
9 to your paper.

10 A. Right.

11 Q. And as of May of 1963, had the accumulation of
12 nicotine in the brain been demonstrated definitively
13 in humans?

14 A. I don't think so.

15 Q. So would you regard this statement "High
16 accumulation in the brain" in this May 1963 document
17 as being a new finding in humans?

18 A. It would have been new in humans, but it wasn't
19 novel. I mean there's a difference there. Because I
20 would have been very surprised if it was different in
21 humans, that the humans had some totally different
22 circulatory system that it didn't go into the brain
23 in humans the same way it did in animals. So in that
24 respect you would predict that. But it was done in
25 humans.

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1 Q. Generally --

2 A. This paper.

3 Q. Yes. Generally speaking, both in 1963 and '83
4 and '93 and '97, there is always scientific
5 controversy, is there not, as to whether findings in
6 animals are susceptible to interpretation in humans?

7 MR. NIMS: Objection.

8 A. Depends upon the area. With distribution
9 studies and absorption studies, there's not much
10 disagreement that they're going to be related because
11 the blood flow is known, it's fairly easy to
12 measure. I think when you get into behavioral
13 effects, I think you're on much shakier ground as far
14 as behavior of animals when you get to a whole-
15 animal level as far as learning tests and maze
16 performance and things like that, whether you're
17 really predicting what would happen in a human.
18 So --

19 But here I think it's pretty clear that you
20 could do it in any mammal and it would probably be
21 about the same, same rate, same timeframe.

22 Q. In May of 1963 was it accepted in the scientific
23 and medical communities that findings in mice could
24 be directly applicable to those same effects in
25 humans?

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- 1 A. With respect to nicotine pharmacokinetics, I
2 would say that's true.
- 3 Q. Then the next section of this "Fate of Nicotine
4 in the Body" paper was entitled "Elimination?"
- 5 A. Yes.
- 6 Q. And that's the E-l-i-m designation at the left?
- 7 A. Yes.
- 8 Q. And you said "Nothing relevant." Right?
- 9 A. Yes.
- 10 Q. What did "elimination" refer to?
- 11 A. Well I don't remember what is in this paper, but
12 that would refer to the metabolism and excretion of
13 nicotine, probably the rates that it happened. I
14 don't remember whether there was good data on that in
15 this "Fate of Nicotine in the Body," but it wouldn't
16 relate to nicotine's actions in the brain or anything
17 new. They didn't know a lot about the metabolism of
18 nicotine back then.
- 19 Q. And then under the discussion section there's a
20 line that reads "Two phase elimination." Do you see
21 that?
- 22 A. Uh-huh.
- 23 Q. Yes?
- 24 A. Yes.
- 25 Q. Okay. And there are some calculations there

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1 about binding, and is it "reparations" or
2 "separation?"
3 A. Where are you talking about?
4 Q. From the parentheses, sir.
5 A. Well that's a quote from the document. Looks
6 like "separation."
7 Q. Whatever it actually says, --
8 A. Yeah, that's --
9 Q. -- my question to you is: Had that phenomenon
10 of two phase elimination been demonstrated in humans
11 as of May of 1963?
12 A. I --
13 Q. In the scientific or medical literature?
14 A. I don't know, but I don't think so.
15 Q. Then the next section is, quote, Tolerance and
16 Addiction, close quote. Do you see that?
17 A. Yes.
18 Q. And then you make the editorial comment,
19 "Present results offer no conclusive evidence for
20 mechanism?"
21 A. Right.
22 Q. Have I read that correctly?
23 A. Yes.
24 Q. What did you mean by that?
25 A. Well I'd have to look at the results. There

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1 they obviously talked of something about tolerance
2 and addiction on page 27 of the document, and it
3 looks like they didn't discuss the mechanism. I
4 don't know what they did discuss. I can't remember.
5 This would be a good one to go back, and I wish I had
6 it.

7 Q. Okay.

8 A. Yeah.

9 Q. As of May of 1963, was the concept of tolerance
10 related to nicotine and cigarette smoking in humans a
11 recognized medical phenomenon in the medical or
12 scientific literature?

13 A. There was a general conception of a lack of very
14 marked tolerance to nicotine at that time.

15 Q. And what conclusion did these authors make about
16 the concept of tolerance, that there was such a
17 phenomenon, or that there was a lack of tolerance?

18 A. I can't remember.

19 Q. And as of May of 1963 was there a consensus of
20 view about addiction from nicotine in cigarette
21 smoking in the medical and scientific literature?

22 A. Well in a very specific, clear categorization it
23 was said that it was not addicting in 1963, it was
24 habituating by definitions of that time, but many
25 people were characterizing cigarette smoking

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1 particularly as being addicting even though they
2 didn't fit the definitions that were in the World
3 Health Organization reports at that time.

4 Q. So to the extent that these authors concluded
5 that nicotine in cigarettes was addictive, assume for
6 me that that's what they said --

7 A. Yeah. I don't know that they said that.

8 Q. Right.

9 A. But assume they did that.

10 Q. Assume, if you would, that they did say that,
11 would you regard that as a significant finding as of
12 May of 1963 in humans?

13 A. Well I'm sure this document had no evidence that
14 it was addicting. They didn't carry out experiments
15 on the addictive nature of nicotine in humans, so if
16 they said it, it would have just been their opinion
17 that it was addicting. But there were no --

18 This was a document on the fate of nicotine in
19 the body on pharmacokinetics, which as I said gives
20 no evidence or mechanism for tolerance or addiction.
21 So they may well have said it is addicting, but it
22 wouldn't have made a difference to me. I mean they
23 couldn't have published that information without some
24 kind of data supporting that it was addicting in
25 humans. And I don't think that was the purpose of

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1 the project. They didn't look at that.

2 Q. Then at the bottom you say, "These results might
3 have been interesting to publish, but there was no
4 novel finding or breakthrough. Need more, quote, N,
5 close quote, data to variable." Right?

6 A. Yes.

7 Q. N refers to the number of patients in the study?

8 A. Right.

9 Q. And why do you say the results might have been
10 interesting to publish?

11 A. Because, as you say, it was the first --

12 I remember this was the first study like this in
13 humans, so it might have been interesting to publish.

14 Q. Was this report, in your judgment, worthy of
15 reporting to governmental authorities that have
16 responsibility for tobacco products, whether it's in
17 the United States or elsewhere, --

18 MR. NIMS: Objection.

19 Q. -- as of May 1963?

20 MR. NIMS: Objection.

21 A. I don't know. I mean you're saying was it my
22 opinion --

23 What was the question again?

24 Q. Do you believe, having reviewed this document in
25 the last year, --

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1 A. Uh-huh?

2 Q. -- that as of May of 1963, because of the
3 findings in humans that it made, that it was worthy
4 of reporting, not publishing in the world literature,
5 but reporting to a governmental entity?

6 MR. NIMS: Objection.

7 A. Worthy of reporting? I really don't know. I
8 don't know what the criteria for reporting to the
9 governmental agencies are, and I really have no
10 indication of whether they were supposed to do it or
11 weren't supposed to do it or --

12 I don't know.

13 Q. As a pharmacologist, you're familiar with the
14 Food, Drug & Cosmetics Act; are you not?

15 A. Vaguely.

16 Q. And you understand the duty of manufacturers of
17 products covered by that act to report to FDA
18 significant findings with respect to their products?

19 MR. NIMS: Objection.

20 A. Well with drugs I'm aware that any adverse
21 reactions have to be reported and things like that,
22 any unknown problems or contraindications. As far as
23 products like this, I really don't know. And I
24 don't --

25 There's no evidence in here of any unknown

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1 quantity that they discovered, any unknown thing,
2 except for, you say, they pretty much verified what
3 you would have assumed from the animal studies to
4 also happen in humans. In that respect it was new in
5 the humans, but whether that was worthy of reporting
6 as any consequence of the smoking or certainly
7 adverse consequences, I just don't know.

8 Q. Do you categorize nicotine as a drug?

9 A. Yes.

10 Q. And so to the extent that a drug within a
11 product caused these findings in humans and was the
12 first such finding as of May of 1963, you would
13 agree, would you not, that that finding should be
14 reported to an appropriate governmental authority
15 that regulates that drug?

16 MR. NIMS: Objection.

17 A. I don't know whether FDA regulated nicotine.
18 Nicotine --

19 When I say it's a drug, because any -- any
20 chemical that you give to the body to cause some kind
21 of an effect is considered a drug, but to me the FDA
22 regulates marketable drugs that are used for some
23 purpose, and nicotine didn't have any marketable
24 purpose at that time. I don't know whether the FDA
25 regulated it or not.

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1 Q. Well it had a marketable purpose within the
2 cigarette; did it not?

3 A. I wouldn't characterize it as a -- as a drug in
4 a cigarette, marketable in that way.

5 Q. Why not?

6 A. Because I don't think that cigarettes are
7 marketable as delivering the drug nicotine. That's
8 not why people are smoking, as I've said, to only get
9 the nicotine drug from the cigarette.

10 Q. Have you seen company documents that describe
11 the cigarette as a nicotine-delivery device?

12 A. Yes.

13 Q. And you disagree with those?

14 A. Yes.

15 Q. Those people who said that are just wrong?

16 A. Well I'm sure that's what those people that said
17 that believed.

18 Q. And your disagreeing with them is based on what?

19 A. Because there's no evidence that people -- that
20 nicotine will substitute for cigarette smoking, that
21 they will be satisfied by nicotine without the
22 smoking. In fact there's evidence that they are just
23 the opposite, that it's the smoking that's the more
24 behavioral component of it than -- than it is the
25 nicotine. And there are other people in the

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1 documents that I read, other quotes that said we
2 don't know why people smoke, we don't know the extent
3 of nicotine importance in cigarette smoking, things
4 like that. So I don't know what the company policy
5 was or what the company really believed, but the
6 people that said those statements, I'm sure they were
7 saying what they believed.

8 Q. Going back to the document, "Fate of Nicotine in
9 the Body," as part of your review of these documents
10 have you at any time compared, in this case, B.A.T.'s
11 public statements about nicotine and its effects to
12 their internal documents such as the document we've
13 been talking about?

14 A. I haven't formally or systematically done that.

15 Q. Do you have an impression in your mind as to
16 whether the internal findings of B.A.T. and their
17 public statements about nicotine and its effects are
18 the same?

19 MR. NIMS: Objection.

20 A. Well there are a lot of statements in the
21 documents. Some of the people are making statements
22 one way, some of the people are making statements the
23 other way, so I don't know what the company would
24 produce as their public statement. I haven't seen
25 the public statements that the -- that the companies

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1 made, really, I've just seen quotes and conferences
2 and people sending memos around that say certain
3 things. All through the documents I see those kind
4 of statements, but I have not seen the, you might
5 say, the public, formal declaration that the
6 statement -- that the companies have made about their
7 products.

8 Q. You're not aware of the CEOs of the tobacco
9 companies making public statements about whether
10 their products cause disease or whether they're
11 addictive?

12 A. Yes, I've read those in the paper, the
13 statements they've made.

14 Q. And do you find that those public statements are
15 consistent with or inconsistent with the documents
16 you reviewed that are the internal documents of the
17 companies, --

18 MR. NIMS: Objection.

19 Q. -- at least the four companies you've looked
20 at?

21 MR. NIMS: Objection.

22 A. Well I think the questions that were asked and
23 the way they answered the questions, they are being
24 truthful and consistent in what they say, because the
25 questions are asked like "Do you think cigarette

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1 smoking causes cancer? Do you think nicotine is
2 addicting?" Those are the kinds of things I read in
3 the paper. And I think they --

4 I don't think they're inconsistent with what the
5 statements say the company policies are in the
6 documents necessarily, not what certain individuals
7 say, but what the company policies are, which I said
8 I really don't know. But I assume that the CEOs are
9 saying what the company policy is, I guess. I don't
10 know. They're probably stating their personal
11 opinion too.

12 Q. In order for this document, the "Fate of
13 Nicotine in the Body," or any others that you've
14 looked at to be significant, do you believe they must
15 be of publishable quality to be significant in the
16 medical or scientific community?

17 A. In general I would say yes, because if you
18 haven't done the studies carefully enough to not be
19 publishable, then the significance of the finding is
20 suspect.

21 Q. Define "publishable" for me.

22 A. That the experimental procedures were done
23 carefully so you know that the numbers that you got
24 from the experiments are correct; that you had
25 appropriate controls so there's not investigator

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1 bias; hopefully the experiments were done blind so
2 subjects didn't know, for example, whether they were
3 getting a drug or not getting a drug. I mean there
4 are a lot of things that go into making you confident
5 in the conclusions that came from the study, and if
6 you're not confident in the conclusions that came
7 from the study, I don't know that you could comment
8 too much on the significance of what they found if
9 you weren't confident of the results.

10 Q. Do you regard case reports as having medical
11 significance?

12 A. Yes.

13 Q. Why?

14 A. Well as far as one individual, which is what
15 they usually are, reacting to a certain drug, they
16 add a little bit of information. I think if you got
17 enough case reports in, you could make some maybe
18 generalizations about what a drug does or adverse
19 effects and things.

20 Q. Case reports are published?

21 A. Yes.

22 Q. So is it fair to say that not all material that
23 is publishable has to be a double-blinded, controlled
24 study?

25 A. That's right.

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- 1 Q. And so --
- 2 A. But --
- 3 Q. Yes, go ahead.
- 4 A. -- what I was going to say, the conclusions from
- 5 the case reports, there usually aren't very good
- 6 conclusions from the case reports except this
- 7 happened in this patient, so the significance of that
- 8 is suspect because there wasn't a hypothesis-driven
- 9 study to investigate anything. It was -- it's a
- 10 phenomenological publication.
- 11 Q. Well these 10 patients that were looked at with
- 12 absorption, distribution and elimination in mind
- 13 would certainly be at least of the significance of a
- 14 case report; would they not?
- 15 A. Yes. This is kind of getting halfway between a
- 16 case report and a good study. I mean 10 may have
- 17 been enough if they had had very close numbers, but
- 18 there's so much variability that they couldn't say
- 19 much with only 10. That's why I put down there you
- 20 need more Ns to tighten those numbers up. But if you
- 21 want to compare it to a case report, it would have
- 22 been publishable as a case report.
- 23 Q. And the fact that this work was done in humans
- 24 would be of significance; would it not?
- 25 A. Yes.

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1 Q. Unlike the work of some of the authors we talked
2 about, Schmitterlow and Hanson and so forth that did
3 it in animals, it would be more significant that this
4 work was done in humans rather than repeat the same
5 sort of experiments that they had done in mice.

6 A. Right. It would be more significant to humans
7 that this was done in humans I guess.

8 Q. Well we only do this work for humans; right?

9 A. Yes.

10 Q. That's what I thought.

11 Have you at any time since you were first
12 contacted about the historical review talked to any
13 current or former employees of any tobacco company
14 other than lawyers?

15 A. No.

16 Q. Have you ever talked to any science types,
17 scientists, researchers, medical doctors, medical
18 personnel of any tobacco companies since you were
19 first contacted?

20 A. At meetings I have probably talked to some, and
21 when I -- one in particular, but it had really
22 nothing --

23 I probably would have talked to him anyway. It
24 was really not directly about the case.

25 Q. Who was that?

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- 1 A. Pat Lippiello.
- 2 Q. And who is that?
- 3 A. He's a scientist at R. J. Reynolds, and he does
- 4 work closely related to what I do on looking at
- 5 nicotine effects in the body.
- 6 Q. He's an employee of RJR?
- 7 A. Yes.
- 8 Q. And you've spoken to --
- 9 Is it Dr. Lippiello?
- 10 A. Yes.
- 11 Q. You've spoken to Dr. Lippiello at medical
- 12 meetings?
- 13 A. Yes, scientific medical meetings.
- 14 Q. All right. Any other time?
- 15 A. No.
- 16 Q. How many times have you spoken to Dr. Lippiello
- 17 about nicotine and its effects?
- 18 A. How many times over the years, or --
- 19 Q. Yes, sir.
- 20 A. I don't know. A dozen or so. I mean I've seen
- 21 him for years at the meetings. We've come to know
- 22 each other by our mutual interests.
- 23 Q. Does Dr. Lippiello, to your knowledge, share
- 24 your views about nicotine and its effects?
- 25 A. I don't know. I only talked to him about

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1 research findings and kind of the mechanisms of
2 nicotine. I didn't really discuss policy or anything
3 with him.

4 Q. Anyone else other than Dr. Lippiello that you've
5 spoken to?

6 A. That works with the tobacco -- employees of the
7 tobacco companies?

8 Q. Current or former.

9 A. Current or former. You mean since '95 or --

10 Q. Yes.

11 A. I mean I see these people occasionally, so I
12 don't know. I mean, for example --

13 I don't think since '95, no. Not since I worked
14 on the project. But I've never spoken to anybody and
15 had conversations that I wouldn't have had already
16 just about the science. I mean it -- nothing even
17 with Dr. Lippiello had to do with the project or the
18 tobacco documents that I'd read or anything. I don't
19 think I've talked to anybody else.

20 Q. And the only other people you've spoken to about
21 your expert witness work, including the historical
22 review, have been lawyers?

23 A. Yes.

24 Q. And principally Mr. Nims?

25 A. Yes.

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1 Q. Have you spoken to any lawyers from Minnesota
2 ever about this case?

3 A. No, I don't think so.

4 Q. Have you dealt with any Minnesota lawyers other
5 than to get here today?

6 A. No.

7 The reason I had trouble answering the question
8 is because I -- you know, at scientific sessions you
9 give posters, and I know people have come up to me
10 and they'll have on their name tag doctor so and so,
11 Philip Morris or RJR, and I'll talk to them about
12 what's on the poster. I can't remember names, but I
13 have conversations with scientists that work for the
14 tobacco industries occasionally.

15 Q. Uh-huh.

16 A. But it's -- I mean --

17 Q. Have you asked to talk to any company personnel
18 that are scientific or medical in terms of their
19 focus --

20 A. No.

21 Q. -- at any time?

22 A. No.

23 Q. Any particular reason why not?

24 A. Well I assume if they have important information
25 they want to provide to the public, they'll --

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1 they'll publish it. I mean Dr. Lippiello publishes
2 work and the other individuals -- John Robinson has
3 published and talked at meetings that I've attended,
4 things like that. I haven't sought them out to ask
5 what studies they're doing or --

6 Things like that I guess is what you're asking.

7 Q. Yes.

8 In order to gain a historical perspective of
9 what the companies knew and when they knew it, have
10 you asked to talk to any company researchers or
11 people that were around in the '60s and '70s or the
12 '80s?

13 A. No.

14 Q. Do you think that would be useful?

15 A. Well I mean it's -- it's not the focus of my --

16 You know, I'm basically a researcher, so when
17 I -- my main job is to do scientific research and to
18 teach and to be active in the medical school
19 environment. This is kind of a little side project,
20 and I really haven't made this a focus of my efforts
21 to try to contact people in the tobacco industry and
22 track down who said these things. A lot of the
23 people that I wrote -- who wrote these documents, I
24 have no clue who they were or what positions they
25 held in the company. I mean if I was intent on

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1 really delving into this, I would probably try to
2 find out what position they had and whether, when
3 they said what they said, they were basing this on
4 some knowledge base or some former experiments and
5 things like that.

6 I just have not gotten into this. I've looked
7 at the documents that I've been provided with the
8 intent of finding whether those documents contain the
9 information which I thought was novel or new and
10 publishable.

11 Q. Uh-huh.

12 A. That's really the extent of where I want to go
13 on this.

14 Q. In the course of your scientific work at the
15 medical school, you have a certain approach, do you
16 not, to doing your research?

17 A. Yes.

18 Q. And that approach includes steps beyond those
19 that you've done here; true?

20 MR. NIMS: Objection.

21 A. Well it's a whole different approach. I mean --

22 Yes. Completely different type of endeavor.

23 Q. Tell me about that.

24 A. Well in doing scientific research, you're
25 keeping up with the literature very closely. You

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1 talk to people at meetings. You try to find the
2 niche of an expertise that you have that you can --
3 you can direct to a project, in this case to
4 nicotine's effect on the brain, and make some new
5 contributions and new discoveries, basically to try
6 to get grants and trying to write papers. I mean
7 it's a -- it's a -- it's a funding exercise to try to
8 get funded for your lab. And then you want to
9 publish the new work and hopefully make some
10 significant contributions.

11 Q. In its current state, is the historical review
12 something that you would submit for publication?

13 A. Well as I said, I don't know who would want to
14 publish this. I mean this would be a major
15 publication effort and take a lot of money. As a
16 review, the first eight chapters, because there have
17 been a lot of excellent reviews, most of them aren't
18 this encompassing, they will take one of these
19 subjects and there will be a book on it and they'll
20 go into more detail, and they'll take it right up to
21 1997, which really -- we really didn't cover every
22 aspect. Our focus was the breakthroughs, as you
23 might say, when the breakthroughs occurred, not the
24 little bricks that were put in which a comprehensive
25 review would do.

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1 So in its present form, I'm really not sure this
2 would add too much that's not already known. I mean
3 anybody could -- there --

4 There are books on all of these subjects which
5 are more comprehensive than this, and if anybody
6 wanted to look up cognitive behavior or
7 self-administration studies or anything like that,
8 they could find reviews. They had a little more
9 focus than this, but they would be complete.

10 The last chapter I think would be something that
11 I might be interested in publishing, which is, in my
12 opinion, to put a more objective perspective on this
13 nicotine addiction controversy. Which, although you
14 relate that I'm the only one that agrees with this
15 and all the other organizations don't, I know there
16 are a lot of people who have a much more balanced
17 opinion and are not enthralled with the fact that
18 nicotine -- that cigarettes are only nicotine-
19 delivery devices. And -- and there have been books
20 published on this, too, and I have some references in
21 there, so that might be publishable.

22 Q. Uh-huh. Is it your view that those that
23 consider nicotine to be addictive do not reach that
24 conclusion from a balanced assessment of the medical
25 evidence?

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1 A. That's my view.

2 Q. So that the Surgeon General of the United States
3 has a biased viewpoint on this subject.

4 A. I think so. I think it's difficult for me to
5 see how someone can contend that nicotine is
6 addicting when no one's ever been addicted to
7 nicotine. It's as simple as that. And there's other
8 evidence as well. But that would seem to be a fairly
9 straightforward thing to find out, that if people
10 could become addicted to nicotine, and nicotine has
11 been applied to people and been injected in people
12 and people have worn the patch and things like that,
13 and to my knowledge there's no evidence that nicotine
14 is addicting, if you use that word as a severe drug
15 dependence. Does it produce some mild withdrawal,
16 some mild euphoria? Yes. But --

17 You have to define "addiction" first, but it's
18 not addicting in the way that most people would use
19 the word in a very pejorative sense.

20 Q. If I changed the word from "addictive" to "a
21 dependence" without the adjective mild, moderate or
22 severe in front of it, --

23 A. Uh-huh.

24 Q. -- as a dependence, is it your opinion that
25 nicotine in cigarettes is dependence-producing?

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1 A. The nicotine in cigarettes? I would not
2 disagree with that. I'm not sure that the evidence
3 is real strong, but it's probably a correct
4 statement, that the amount of nicotine they receive
5 from cigarettes can produce some degree of
6 dependence.

7 Q. And do you ascribe to the point of view that in
8 current-day thinking, the last 10 years let's say,
9 that the terms "addiction" and "dependence" are used
10 synonymously?

11 A. Unfortunately, yes.

12 Q. You agree with that statement.

13 A. I agree that they're used interchangeably now in
14 the last 10 years.

15 Q. In the course of the work that you've done in
16 the last two years for the litigation project, --

17 A. Right.

18 Q. -- have you learned that some number of
19 documents of a scientific nature have been withheld
20 by reason of a claim of privilege about them?

21 MR. NIMS: Objection.

22 A. No, I don't --

23 I have not learned that they've been withheld.

24 Q. But you don't know that one way or the other.

25 A. I don't know that.

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- 1 Q. You don't know whether that's true.
- 2 A. I don't know whether that's true.
- 3 Q. And you have not asked to see, have you, any
- 4 scientific documents that are not publicly available
- 5 from either Mr. Nims or from any other counsel?
- 6 A. No.
- 7 Q. Have you seen any formula documents, Dr. Rowell?
- 8 A. Any what?
- 9 Q. Formula documents, the formula for cigarettes.
- 10 A. In some of the documents I saw --
- 11 You mean as far as what's in the cigarettes?
- 12 Q. Yes, sir.
- 13 A. Yes, I've seen some mention of that.
- 14 Q. Separate and apart from the documents that
- 15 you've reviewed, the notes of which we have here,
- 16 have you actually seen formula documents from the
- 17 cigarette companies themselves?
- 18 A. Not separate from the documents that I've
- 19 reviewed. They've been in the documents I reviewed.
- 20 Q. Do you regard your work in connection with the
- 21 opinions that you intend to express at the time of
- 22 trial in this case as being complete?
- 23 A. Are my opinions complete?
- 24 Q. Is your work complete.
- 25 A. "Is your work complete?"

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1 I can't answer that because I don't know what --
2 well I know it's not complete in the fact that I
3 will -- I will finish reading the documents that I've
4 received that I have not read yet because I've been
5 given them to look at. I just haven't had time to do
6 it. At that point I will make a judgment whether
7 they in fact provide new information, and I might
8 change my opinion, I might not. After that I can't
9 see me changing -- I mean I --

10 I won't make work for myself and ask for any
11 more documents. But if I'm provided more documents,
12 I'll -- I'll review them, too. So --

13 MR. NIMS: And just for the record, we have
14 just, as you know, completed the deposition of Dr.
15 Hurt, and there are some company documents that Dr.
16 Hurt has reviewed that it is our intention to still
17 provide to Dr. Rowell.

18 MR. SILBERFELD: Limited to that; that is,
19 Hurt documents that he looked at?

20 MR. NIMS: That's my present intention
21 anyway, is limited to documents that Dr. Hurt
22 reviewed. Somebody else may already know they have
23 an intention to show him something else that I don't
24 know about, but --

25 THE WITNESS: I know, just as a follow-up

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1 on that, because I read Dr. Hurt's expert report,
2 many of the quotations in the documents that he
3 referenced in there I have not seen.

4 Q. What have you not seen, the documents or the
5 quotations?

6 A. The documents.

7 Q. Oh.

8 A. He put Bates numbers in his expert report.

9 Q. Yes.

10 A. Said this, this, and Bates number. And I looked
11 up, and most of them I haven't seen, I haven't been
12 provided.

13 Q. When did you read Dr. Hurt's report for the
14 first time?

15 A. First time?

16 Six weeks ago maybe. Whenever I first got it.

17 Q. And did you ask counsel for the documents
18 referred to in the Hurt report?

19 A. No. I didn't go down and actually check the
20 Bates numbers of which ones I had and didn't have
21 until just last week, so I didn't have a run-down.
22 And plus, there are probably 10 or 12 of the
23 documents that were included with Hurt's expert
24 report that I also haven't had time to get to, and so
25 they may be in there. But -- but I will eventually

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1 get around to this.

2 Q. Are there points of disagreement between you and

3 Dr. Hurt?

4 MR. NIMS: Objection.

5 A. Well yes. But could you be specific? I mean --

6 Are there any points? Yeah.

7 Q. Yes.

8 As you sit here today, can you tell me an area

9 or areas where you and Dr. Hurt disagree?

10 A. Well in general I think Dr. Hurt is of the

11 opinion that it is the nicotine in cigarette smoking

12 that is completely driving the smoking habit.

13 Smoking addiction he would call it.

14 Q. Do you think he says that completely; that is,

15 the nicotine completely explains the reason for

16 smoking?

17 A. It pretty much looks like it from his expert

18 report, the only thing I have from him, that he is

19 basing smoking behavior, maybe I'll say, almost

20 exclusively on the presence of nicotine in the

21 cigarettes, and so that's the major point of

22 disagreement.

23 Q. And your view is that it's a significant factor

24 but not the only factor.

25 A. Yes.

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1 MR. NIMS: Objection.

2 Q. Right?

3 A. It's a significant factor.

4 Q. And not the only factor.

5 A. It -- it's not -- certainly not --

6 I clearly think it's not the only factor. He
7 makes some statements in his expert report that I
8 don't agree with, specifically about rapidity of
9 travel across the lung. And he's -- he's got some
10 misquotes from the documents that --

11 The very first one I looked up, he had a quote
12 around it, and didn't quote it rightly -- right. So
13 there are things that are even incorrect.

14 Q. On June the 30th you signed a six-page report --

15 A. Yes.

16 Q. -- which is your expert report.

17 A. Yes.

18 Q. Who prepared the report?

19 A. I did.

20 Q. Completely?

21 A. Yes.

22 Q. Was any draft of it reviewed by anyone?

23 A. No.

24 Q. Was it changed in any way from the first draft
25 to this final draft?

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1 A. Well I'm sure I had on my word processor
2 previous drafts, so there I'm sure were changes.
3 I -- you know, I worked on it for a while.

4 Q. Did you discuss the draft or its contents with
5 anyone before issuing the final?

6 A. I can't -- I can't recall. I don't think so.
7 Mr. Nims might have had the final draft and we
8 discussed it at that point, but I don't know that it
9 was completely finished. I really can't remember.

10 Q. Were any --

11 A. Trying to go back and --

12 No, I think the final draft was -- was finished
13 when he saw it the first time.

14 MR. NIMS: Just if we could go off the
15 record a second.

16 (Discussion off the record.)

17 BY MR. SILBERFELD:

18 Q. I neglected to ask you earlier whether you ever
19 testified in a trial.

20 A. No.

21 Q. Ever testified at a government hearing of any
22 kind?

23 A. No.

24 Q. Ever given written testimony in the form of a
25 letter or a report of any kind having to do with

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1 nicotine and/or its effects?

2 A. No.

3 Q. You're affiliated at the present time, Dr.

4 Rowell, with the University of Louisville School of
5 Medicine?

6 A. That's correct.

7 Q. Does the School of Medicine have a stated
8 position on whether smoking causes disease?

9 A. I don't know.

10 Q. It may have, it may not have, you don't know one
11 way or the other?

12 A. I don't know one way or the other. They have a
13 smoking policy that I've seen, and I don't know if it
14 talks in there about diseases, I doubt if it does;
15 it's whether you can smoke in buildings and things
16 like that.

17 Q. Does the School of Medicine have a position that
18 it's taken with respect to whether or not nicotine is
19 dependence-producing or addictive?

20 A. I don't know, but I don't think so. Fairly
21 confident it has no position on that.

22 Q. You are not a medical doctor.

23 A. That's right.

24 Q. You don't treat patients.

25 A. That's right.

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1 Q. Are you consulted at times about patient care
2 from a pharmacological standpoint?

3 A. Occasionally, yeah.

4 Q. By M.D.'s?

5 A. Yes.

6 Q. And have you in the course of your time at
7 Louisville been consulted with respect to smoking-
8 cessation issues by any M.D. at the University School
9 of Medicine?

10 A. Yes. Generally by phone. If there's a
11 question, almost always they call the pharmacology
12 department, and depending upon what people are there,
13 they'll refer them to me if it has anything to do
14 with nicotine. Usually there will be a question on
15 the half-life of nicotine in the body or how long can
16 you measure cotinine in the blood of a smoker.

17 I had a question on, with pregnant women, how
18 you could determine when the time they last smoked,
19 if you tell them not to smoke, and things like that.
20 So off and on.

21 Q. In 1989 you spent some time at the University of
22 Bath in England?

23 A. Yes.

24 Q. A visiting professorship?

25 A. Yes.

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1 Q. In the course of that did you participate in any
2 meetings or conferences of any kind that dealt with
3 tobacco-related issues?

4 A. No.

5 Q. Did you participate in a biobehavioral
6 conference in 1989 with someone by the name of
7 Wonnacott, W-o-n-n-a-c-o-t-t?

8 A. No, I didn't participate, but I was on the
9 present -- I was on the paper that she presented at
10 that conference.

11 Q. But you didn't participate?

12 A. I wasn't there, no.

13 Q. And that was at the University of Bath.

14 A. I don't think it was. I thought that was on the
15 continent of Europe or something. Maybe I've got the
16 wrong conference here.

17 Q. What role did you have in the paper she
18 presented?

19 A. I did some experiments on a drug called
20 anatoxin, which we were looking at the ability of
21 that to upregulate receptors and whether those
22 receptors were functional, and she presented part of
23 that work in her presentation at that conference.

24 Q. That conference was sponsored by whom?

25 A. I don't remember. Thought it was a drug

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1 company. Ciba maybe. Was that the --
2 I don't remember.
3 Q. How about R. J. Reynolds?
4 A. I don't know. Maybe.
5 Q. Does it refresh your memory at all about that
6 whether Dr. Lippiello was part of it?
7 A. In 1989, I mean, I didn't go to the conference.
8 I don't know where -- where it was or --
9 I'm pretty sure it wasn't in Bath because I
10 probably would have gone because I was there.
11 Q. With respect to -- and I'm now referring to the
12 second page of your CV where you list your
13 professional affiliations. With respect to any of
14 the societies of which you are a current or past
15 member, do they, to your knowledge, have an official
16 or a stated position on smoking and whether it causes
17 disease?
18 A. I really don't know. The only one that I'm
19 thinking of is the Society for Research on Nicotine
20 and Tobacco, which I guess is in there somewhere.
21 Q. Not listed here.
22 A. Hmm.
23 Q. Let me show you the version of the CV I have.
24 Am I looking at the wrong page?
25 A. No. I guess I didn't put it down there. I'm

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1 surprised.

2 Q. What's it called?

3 A. Society for the Research -- Society for Research
4 on Nicotine and Tobacco. And I remember a big
5 controversy about a year ago about whether everybody
6 in the society had to agree to the bylaws, I guess it
7 was -- it wasn't the bylaws, but it was the purposes
8 of the society, and part of the purpose was to -- to
9 try to do what they could to prevent cigarette
10 smoking and to acknowledge the health hazards of
11 cigarette smoking or something like that. So they
12 have a preamble to their agreement of membership.
13 And there are some tobacco company scientists, I
14 think, that are part of the organization. They were
15 trying to kick them out. So there was a big
16 controversy about this. But that's -- that's the
17 only one I really know anything about. The others
18 may have, but I -- I don't know.

19 Q. So the Society for Research on Nicotine and
20 Tobacco has a stated position --

21 A. Yes.

22 Q. -- or point of view on whether or not cigarette
23 smoking causes disease?

24 A. I think so.

25 Q. And --

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1 A. Certainly whether --

2 Certainly whether it's something that society
3 should make efforts to contribute to stopping
4 smoking. I don't know exactly whether they say it
5 contributes to disease, but it might say that.

6 Q. And do you ascribe to that point of view
7 yourself?

8 A. Yes.

9 Q. With respect to any of the professional
10 affiliations listed in the CV, including the Society
11 for Research on Nicotine and Tobacco, do any of them,
12 to your knowledge, have a stated position on whether
13 or not nicotine produces a dependence or an
14 addiction?

15 MR. NIMS: Objection.

16 Q. Nicotine in cigarettes.

17 A. I don't know whether they have a stated position
18 on that or not.

19 Q. On page three of your CV under service
20 activities you list, under state and national, a
21 group called ASPET/SOT. What is that, sir?

22 A. The American Society for Experimental
23 Therapeutics -- Pharmacology and Experimental
24 Therapeutics, and SOT is the Society of Toxicology.

25 Q. And then on page -- beginning on page four and

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1 running over to page six you list funded research
2 grants.

3 A. Yes.

4 Q. Let me show you the CV version I have, and
5 please tell me whether these are all the funded
6 research grants that you've ever received in the
7 course of your professional career.

8 A. I think so. I wouldn't have left any out.

9 Q. Well it just may not be a current version of the
10 CV, which is why I show it to you.

11 A. Yes, uh-huh.

12 Q. Does the Tobacco and Health Research Institute
13 receive any money from any tobacco company, to your
14 knowledge?

15 A. I don't think it does.

16 Q. Do you know for sure?

17 A. I don't know for sure, but I don't think it
18 does.

19 Q. Have you ever served in any capacity in the
20 Tobacco Health Research Institute where you would
21 have access to the accounting information as to what
22 money comes in and what money goes out --

23 A. No.

24 Q. -- and that sort of financial data?

25 A. No.

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1 Q. On page five of your CV you list a funded
2 research grant from the British-American Tobacco
3 Company. Do you recall that?

4 A. Right.

5 Q. Eighteen hundred dollars, with -- is it Ms.
6 Wonnacott?

7 A. Right.

8 Q. Was that the paper that she presented at that
9 biobehavioral conference we talked of earlier?

10 A. Yes. Subsequent to my work in her laboratory
11 she had received some money from B.A.T., and for the
12 sake of completeness, because I was on that paper and
13 she referenced this for support, I put that in there
14 just --

15 But she got the money. She was the principal
16 investigator, and it was given to her in Bath and to
17 her lab. So I put myself down there as a
18 co-investigator because I think, I'm not sure, that
19 she probably used that money to buy some of the
20 anatoxin, some of the compounds I worked on.

21 Q. Did you work on the paper or the experiments
22 with her?

23 A. I did the experiments, yeah.

24 Q. Yes.

25 A. She didn't do them with me. I mean I did them,

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1 but she -- I was in her lab.

2 Q. And you drove --

3 You derived no benefit from this money that was
4 given by the British-American Tobacco Company?

5 A. I don't know exactly whether the money went
6 directly to me, but if I received any benefit, the
7 most direct would have been that it came to her and
8 that she bought some of the chemicals and things that
9 I used. But I don't know. That would have been the
10 benefit. But I would have done the work anyway. I
11 mean I was already there.

12 Q. Has any of your research been funded in whole or
13 in part by The Council for Tobacco Research?

14 A. No.

15 Let me -- let me follow up on that again.

16 Q. Sure.

17 A. When I was a post-doctor fellow in Dr. Sastry's
18 lab at Vanderbilt, he, I think, received Council for
19 Tobacco Research support. And I was in his
20 laboratory, so again that money may have indirectly
21 been used to support some of my research, because he
22 was the principal investigator of that laboratory.
23 So -- but personally or on any grants that I've been
24 personal investigator, I have not received any money
25 from The Council for Tobacco Research or from a

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1 tobacco company.

2 Q. The paper you did with Susan Wonnacott in 1989

3 while you were at Bath, --

4 A. Right.

5 Q. -- the one supported by B.A.T. --

6 MR. NIMS: Objection.

7 A. Well may have been. And part of that work --

8 Was that the one where I'm first author? Okay.

9 Q. Yes, you're first author with her.

10 A. Right.

11 Q. And you think that the money paid may have been

12 used to obtain the anatoxin?

13 A. I don't know. I never got the money and didn't

14 see it, but it came to her. I think she wrote a

15 letter requesting money to support my research to --

16 to B.A.T. in England when I was there just to help.

17 She -- she's done that periodically, I guess, and has

18 received money over the years from them. When

19 there's a good project that comes down the line, she,

20 as any good investigator does, tries to find a way to

21 support it. So --

22 Q. The acknowledgment to this article provides, in

23 part, "We are very appreciative to Dr. Albuquerque,

24 University of Maryland, for providing the Anatoxin A

25 used in these studies." Does that refresh your

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1 memory as to where the anatoxin came from?

2 A. She had it there when I was there, so I don't
3 know. I did never write Dr. Albuquerque to get it.

4 I actually wrote the project up for -- it was a
5 Fogarty fellowship that I received to go over there.

6 Because I knew she had been working on anatoxin, so I
7 went over there to work on that drug. But I thought
8 that she'd purchased it or something.

9 Q. In 1978 you're listed with Dr. --

10 Is it Ochillo?

11 A. Ochillo.

12 Q. Ochillo. I had two chances at it.

13 -- and Dr. Sastry --

14 A. Uh-huh.

15 Q. -- at Vanderbilt on a paper that was published
16 in Pharmacology. Do you agree with me that the
17 highlighted portion shows it was supported by The
18 Council for Tobacco Research?

19 A. Yes. That's the work I was referring to earlier
20 when I was a post-doc in Dr. Sastry's lab. And I
21 followed that up with my assertion I never received
22 the funding for my research. I don't know whether
23 that was --

24 Q. Was that the only time that there was funding
25 from CTR of work done by you?

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1 A. Well Dr. --

2 See, Dr. Sastry received the CTR funding and he
3 ran the lab and funded the research. There is --

4 It very well could have been that I published a
5 paper with Dr. Chaturvedi that may be in there. I
6 don't remember. You know, I didn't put those
7 acknowledgment sections on, so -- because I don't
8 know where the money came from. So if they weren't
9 on the papers that I wrote with him --

10 I think I published, I don't know how many,
11 three or four papers at Vanderbilt, and I'm assuming
12 that he didn't use that money that he got from
13 Council for Tobacco Research for my -- for my work.

14 Q. Do you know one way or the other?

15 A. No, I don't. I just --

16 You'd have to ask him. I mean I never saw the
17 money and never had control of the money. He's still
18 a faculty member there, so --

19 Q. Well here is a paper from 1977 with Dr. -- is it
20 Chaturvedi?

21 A. Chaturvedi, right. That's the other one it
22 might have been.

23 Q. In the acknowledgment section I've highlighted
24 the area I'd like you to look at. Does it indicate
25 CTR supported research?

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1 A. Yes, one of -- one of three places they got
2 funding. You know, whether that funded the part that
3 I did or not, I really don't know.

4 Q. We'd have to ask Dr. Sastry about that?

5 A. I guess so. And he probably doesn't remember.

6 I guess your point is that I'm being influenced
7 unnecessarily by this funding that I received 20
8 years ago, but I don't know whether --

9 MR. NIMS: Just answer his questions,
10 doctor.

11 THE WITNESS: Yeah.

12 Q. And again in 1977, you and Dr. Sastry published
13 in Toxicology and Applied Pharmacology, and am I
14 correct that it also was funded by The Council for
15 Tobacco Research?

16 A. Yes, that's what it says.

17 Q. Do you have any reason to believe that that's
18 inaccurate?

19 A. No, that's probably accurate.

20 Q. And then again in 1980 you and Dr. Sastry, in
21 the Journal of Pharmacology and Experimental
22 Therapeutics -- let me show you this one. Funded by
23 CTR?

24 A. Yes. I mean those --

25 As I said, I didn't put those on there, so he

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1 would be the one that I would defer to that that was
2 correct, but I have no personal knowledge whether
3 that was correct or not.

4 Q. And in 1981, I'm not sure of the journal, but
5 it's Dr. Chaturvedi, you, and Dr. Sastry, again in
6 the paper entitled "Relationships Between Chemical
7 Structure," et cetera. Funded by CTR?

8 A. Yes. Chaturvedi is first author on that,
9 right.

10 I mean in retrospect it looks like a lot of Dr.
11 Sastry's lab was funded by -- at least in part by CTR
12 money, so --

13 (Discussion off the record.)

14 BY MR. SILBERFELD:

15 Q. In 1990 you published a paper with Dr.
16 Wonnacott, Drasdo, and Sanderson?

17 A. Who is the first author? Wonnacott?

18 Q. Wonnacott.

19 A. Right. I think that was the conference I
20 thought you were talking about, because I think that
21 was --

22 Q. Well --

23 A. I don't remember.

24 Q. Let me show you the document.

25 A. Yeah. I know the paper, but --

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1 Q. Is this a paper or book chapter or what?

2 A. I thought it was a --

3 I think it's a book chapter. It is a book
4 chapter, yeah. Yeah. Here it is, this -- this was
5 the one, the Ciba Foundation, I thought you were
6 talking about earlier when you said there was that
7 conference --

8 Q. Right.

9 A. -- about nicotine dependence. That was a
10 symposium that I did not attend, and that's the one I
11 thought you were talking about.

12 Q. And then this article became part of a text of
13 some kind --

14 A. Yes.

15 Q. -- you think?

16 A. It's a book.

17 Q. And it was funded in part by British-American
18 Tobacco Company?

19 A. Yes. That's the same exact work as the other
20 one we talked about when I was in Bath.

21 Q. And is this article published in the Journal of
22 Neurochemistry in 1990 also the same article, or is
23 this something different?

24 A. I thought that's the one you brought up
25 before --

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1 Q. Well maybe it is.

2 A. -- the first time.

3 Q. Okay. May have two copies of the same thing.

4 If that's the case, I apologize.

5 Yeah. Same one.

6 A. Yeah.

7 Q. Sorry.

8 MR. SILBERFELD: Lunch.

9 THE WITNESS: Okay.

10 (Luncheon recess taken at 12:15 o'clock

11 p.m.)

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1 AFTERNOON SESSION

2 (Deposition reconvened at 1:11 o'clock
3 p.m.)

4 BY MR. SILBERFELD:

5 Q. Dr. Rowell, let's press forward if we can.

6 In your expert report you mention in the first
7 full paragraph that your research at the Florida
8 School of Medicine centered on the effects of drugs
9 including nicotine on tissues in the peripheral
10 nervous system. Do you recall that research?

11 A. Yes.

12 Q. And what were your findings, if you could
13 summarize them for me?

14 A. The individual I was working with was interested
15 in whether nicotine could release acetylcholine
16 directly from the terminals, and at that time one of
17 the best ways to measure acetylcholine was with
18 bioassays, applying the acetylcholine to another
19 tissue, specifically the guinea pig ileum was a good
20 one at the time, which would then elicit a response
21 proportional to how much acetylcholine was in the
22 preparation. So we were doing studies on applying
23 nicotine to peripheral tissue in vitro in an organ
24 bath of nerve/muscle preparations and trying to
25 determine whether nicotine was directly stimulating

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1 the muscles or stimulating the muscles indirectly by
2 releasing the neurotransmitter from the pre-synaptic
3 side of the nerve.

4 Q. And what did you conclude?

5 A. Part of nicotine's action is probably, in that
6 peripheral tissue, due to the release of
7 acetylcholine from the pre-synaptic nerve, but I
8 would say it was a minor part. I would say most of
9 the action was due to the stimulation of nicotinic
10 receptors on the post-synaptic side right on the
11 muscle tissue.

12 Q. Does that research have any bearing, in your
13 judgment, on the actions of nicotine in terms of
14 cigarette smoking?

15 A. Not directly, but that led to a proposition that
16 nicotine could release transmitters. I won't go into
17 the reasons why we thought that, but suffice it to
18 say there was some experimental findings that
19 indicated that part of nicotine's action might be due
20 to neurotransmitter release. Then a little bit later
21 than that, in the early '70s, other investigators had
22 found that nicotine in the brain released monoamine
23 neurotransmitters, norepinephrine specifically was
24 the first one, and as this developed it looked like
25 nicotine could release a variety of neurotransmitters

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1 in brain tissues as we had thought it did in the
2 peripheral nervous system.

3 The first study that shows acetylcholine release
4 definitively was in -- of acetylcholine was in the
5 central nervous system, so I carried that research
6 into neurotransmitter releases, which is my area of
7 expertise, and on the area of receptors, so it's a
8 developmental find.

9 Q. So that the findings in the peripheral nervous
10 system were at least consistent with the findings in
11 the central nervous system?

12 A. I don't think it was worked out even today very
13 well in the peripheral nervous system. I say I think
14 the major action is on the -- on the post-synaptic
15 side. The paper that Dr. Cho, who's the person I
16 worked with, published early on had the mechanism
17 really wrong. I mean it was a good hypothesis, that
18 nicotine was taken up into the pre-synaptic nerve and
19 released acetylcholine by displacing it from its
20 storage sites, and I don't think anyone's shown
21 that's really the case. It now is thought to work
22 through a receptor mechanism rather than a
23 displacing-drug-interaction-type mechanism.

24 Q. And when you went to Vanderbilt for your
25 doctoral, your research there focussed on the effects

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1 of drugs such as nicotine to influence placental
2 transport of amino acids during pregnancy?

3 A. Right.

4 Q. And what did that research show?

5 A. Well it had been known that mothers who smoked
6 cigarettes have smaller-birth-weight babies, and the
7 mechanism for this was not known, and the hypothesis
8 there was that it was the nicotine in the cigarette
9 that was somehow influencing maternal/fetal nutrient
10 exchange. And what I looked at was amino acid
11 transport through the placenta. So we obtained human
12 placentas and measured amino acid transport with the
13 effects of nicotine. And what we --

14 Well back up a little bit. There's a
15 cholinergic system in the placenta which is -- it's
16 a -- its function is unknown because there are no
17 nerves in the placenta, it's a non-nervous tissue, so
18 no one really knows why it's there, and we thought it
19 might have something to do with amino acid transport
20 or some other transport, and we found that inhibitors
21 of that cholinergic system could very effectively
22 block the amino acid transport. But then when we
23 tried nicotine on that system, it didn't seem to have
24 much effect.

25 And when I later did this in experimental

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1 animals where you could really put nicotine into the
2 mother rather than to the isolated system, we really
3 couldn't get much of an effect or not. So to this
4 day I don't know whether nicotine is a significant
5 contribution to the lower-birth-weight babies, and I
6 think a lot of investigators have decided that it may
7 well be the carbon monoxide or some of the other
8 components of cigarette smoking.

9 Q. No question but that cigarette smoking is
10 related to lower-birth-weight babies; right?

11 MR. NIMS: Objection.

12 A. Well I don't know if there's any question. In
13 my mind it's pretty clear that when you try to take
14 into account all the confounding factors like
15 socioeconomic status and prenatal health care and
16 things, it still looks like cigarette smoking still
17 produces some decrease in the birth weight of the
18 babies.

19 Q. Whether nicotine standing alone is an actor in
20 that problem is an open question as far as you're
21 concerned?

22 A. Yes.

23 Q. In terms of the work that you described as being
24 original research articles presenting new information
25 about the effects of nicotine, the first one listed

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1 at the bottom of page one of your report is the one
2 describing evidence showing the existence of
3 nicotinic autoreceptor function on nerve terminals in
4 the brain. Do you recall that paper?

5 A. Yes.

6 Q. Journal of Neurochemistry, 1984?

7 A. Yes.

8 Q. What did that show that was new in terms of
9 information?

10 A. That showed --

11 Well nicotinic receptors, if they influence the
12 release of another transmitter besides acetylcholine,
13 which would certainly have to be what's called a
14 heteroreceptor, meaning it's on another transmitter's
15 nerve. An autoreceptor responds to the transmitters
16 that release from the nerve that it's on, so that
17 it's called an autoreceptor because it's -- and so it
18 would have to be on a cholinergic nerve. So we
19 showed that there was nicotinic excitatory
20 autoreceptors. Muscarinic autoreceptors, which are
21 inhibitory, were well-known at that time, but the
22 nicotinic variety of the acetylcholine receptors,
23 which turn out to be excitatory, turned out not to be
24 described in the brain. So that's now pretty much
25 concluded by follow-up studies, that nicotine will

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1 release acteylcholine directly by acting on the nerve
2 terminal.

3 Q. And the paper in 1984 was the first such report?

4 A. Yes, in the brain. There was one previous
5 report in the guinea pig ilium.

6 Q. And this is in the brain of what?

7 A. Rats.

8 Q. Okay.

9 A. I'm sorry, that was -- that was mice.

10 I won't look it up. I'm pretty sure that was
11 mice. It's been a long time since I've used mice,
12 but that was a mouse study.

13 Q. The dopamine release, nicotine-stimulated
14 dopamine release paper, same journal, 1987, in a
15 particular area of the brain, do you recall that one?

16 A. Yes.

17 Q. First such report?

18 A. Yes. That's the nucleus accumbens area, and
19 that was the first time that had been shown to be
20 effective at the nerve terminals of the nucleus
21 accumbens.

22 Q. And that was what type of animal?

23 A. That was a rat.

24 Q. The paper published three years ago in the same
25 journal demonstrating the ability of very low

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1 concentrations of nicotine to both desensitize as
2 well as stimulate dopamine release from nerve
3 endings, do you recall that paper?

4 A. Yes.

5 Q. What was the hypothesis going into that paper or
6 that study?

7 A. Well the hypothesis was -- hypothesis was that
8 nicotine could desensitize receptors at
9 concentrations lower than it would be able to
10 stimulate those receptors. This was developed on the
11 basis of binding studies which found that nicotine
12 would bind to receptors at concentrations much lower
13 than were required to actually elicit a response from
14 those receptors, and it wasn't really known why there
15 would be a binding affinity at very low
16 concentrations. This was a functional study which
17 showed that you could actually measure
18 neurotransmitter release and you could show that
19 there was an effect at these very low concentrations,
20 but what that effect was was a desensitization of the
21 receptor before you could get a sufficient
22 concentration to stimulate, if -- if that makes
23 sense.

24 Q. How was the desensitization measured?

25 A. Because when you put nicotine in at very low

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1 concentrations initially, if those -- you don't see
2 anything happen with the tissue, but when you then
3 try to stimulate the tissue with the stimulating
4 concentrations of nicotine, if you have put on the
5 nicotine at very low concentrations, you don't get
6 that response, so it has blocked the subsequent
7 ability of nicotine to produce the response.

8 Q. Does that study suggest anything at all to you
9 in terms of the action of nicotine from cigarettes in
10 humans?

11 A. Yes. It's very interesting to me because the
12 concentrations in the blood of cigarette smokers
13 should be high enough to desensitize the receptors
14 pretty much all the time. The concentrations
15 required to desensitize receptors is quite low, and
16 so the chronic steady-state blood levels in cigarette
17 smokers, or particularly people wearing nicotine
18 patches, should be sufficient enough to desensitize
19 those receptors, which means a lot of the receptors
20 should be inactivated, so that nicotine -- bolus
21 nicotine delivery should really have very little
22 response on those receptors because they had been
23 desensitized.

24 So that's really an open question about why
25 cigarette smokers receive any effect from the

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1 nicotine in the cigarette smoke if you base it on
2 these desensitization results. And I think that's
3 kind of a controversy now that people are in the area
4 trying to figure out what influence that
5 desensitization process has, what physiological
6 effect it has.

7 Q. From that paper, I take it you were able to
8 calculate what amount of nicotine would desensitize
9 the receptors.

10 A. Yes.

11 Q. Were you able to in some mathematical or other
12 fashion calculate what that amount or dose of
13 nicotine would be in a human, average height, average
14 weight?

15 A. Well I'm basing these results on studies that
16 have already been done in humans where blood levels
17 are fairly well known.

18 Q. I was talking about the dose that would
19 desensitize.

20 A. Yes.

21 Q. You had a finding of that with the rat or rats
22 that you used in your study.

23 A. Right. Yes. That would be --

24 Do you want the actual numbers? I mean --

25 Q. Sure.

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1 A. -- I think in terms of molarity. It would be a
2 concentration of about 30 nanomolar in the blood,
3 which would be approximately -- that would work out
4 to -- I'd have to convert that to nanograms per mil
5 because in most clinical studies they relate blood
6 levels to nanograms per milliliter of blood. But
7 it's -- it's -- it's well within that range. It
8 should be about 150 nanograms per mil, which would be
9 well over what the steady-state blood levels in a
10 smoker. They average around 30 to 40 nanograms per
11 mil, milliliter.

12 And interestingly, that's just the blood level.
13 And since the brain may have nicotine concentrations
14 even higher than that, as we talked about earlier,
15 they should be well up into the range where the
16 receptors are basically turning off. So it's a very
17 interesting kind of a problem.

18 Q. So that the theory or the proposition suggested
19 by that work is that nicotine would actually inhibit
20 the release of dopamine from these particular
21 receptors at certain levels.

22 A. Well I don't know whether inhibit. It would --
23 Nicotine would block its own action. Whether it
24 would inhibit the normal nerve impulses coming down
25 may not be right.

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1 Q. It would --

2 A. It may.

3 Q. It would have a tendency to desensitize the
4 receptor from the release of dopamine by yet other
5 administrations of nicotine.

6 A. Right.

7 I think the question is what are those receptors
8 doing there in the first place? What is the --
9 what -- what does the body use those nicotinic
10 receptors for? Are there pathways that lead down to
11 those receptors that excite or inhibit the dopamine
12 release?

13 It could be that pathways that come down are
14 actually inhibitory to the dopamine release, so if
15 you block that effect you actually remove an
16 inhibition. So it's --

17 It gets complex as far as what you think the
18 network in the body is, so I'm not willing to say
19 that it's going to inhibit or excite dopamine
20 release, but it should prevent a nicotine-stimulated
21 release of the -- of the dopamine or other
22 transmitter.

23 Q. Based on this finding in animals.

24 A. Right.

25 Q. Has that been demonstrated in humans, to your

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- 1 knowledge?
- 2 A. No.
- 3 Q. Is there any work in progress that you know
- 4 of --
- 5 A. Well --
- 6 Q. -- that is -- that is seeking to replicate your
- 7 finding in 1994?
- 8 A. Well there's been --
- 9 Q. Has that been done?
- 10 A. It's been replicated in animals.
- 11 Q. Yes. By whom?
- 12 A. By three or four different labs. Sharon Grady
- 13 and Al Collins at Colorado. And Pat Lippiello has
- 14 replicated that finding, and the next year he
- 15 published a paper showing similar results. But in
- 16 humans, that would be awfully tough to do because you
- 17 can't measure the functional effect in humans. You
- 18 can't really measure dopamine release. That's rather
- 19 invasive --
- 20 Q. Right.
- 21 A. -- to look at the neurotransmitters that are
- 22 being released in the brain. So --
- 23 Q. Are the findings in the rats transferrable
- 24 directly to what one would expect to find in the
- 25 humans on this particular topic?

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1 A. Probably, because you can obtain receptors from
2 humans, from human tissue post-mortem, and the
3 receptors are stable so you can measure the binding
4 characters, and the binding characters also have this
5 low affinity component and the high affinity
6 component, so that they have this -- it looks like
7 they have the ability to bind nicotine at very low
8 concentrations which would be representative of that
9 desensitized state. So there is a -- there is a
10 receptor confirmation that binds nicotine at these
11 nanomolar concentrations.

12 Q. Then that paper refers to a 1997 paper, very
13 recent one, --

14 A. Uh-huh.

15 Q. -- and I'm not sure whether we have that one.
16 Has that one been published?

17 A. That has not. Is that the paper in
18 Neuropharmacology? It's --

19 Q. No. The last one here, Neurochemistry, 1997.

20 A. Oh, that's --

21 Yes, that's been published. That's called the
22 dose/response effects. It's in my curriculum vitae,
23 whether you have the actual paper or not.

24 Well I don't have my curriculum vitae here.

25 Should be the last paper in the group.

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1 Q. Is this it? The very first one there?

2 A. Well I don't --

3 I mean that's the journal. I don't know whether
4 that's the --

5 Yes.

6 Q. Did this paper, the one in the Journal of
7 Neurochemistry in May of 1997, come to a different
8 conclusion than your '94 paper, or perhaps additional
9 different findings?

10 A. Well it was a little bit different focus. We
11 here were addressing the upregulation of receptors,
12 which we didn't address in the '94 paper.

13 Q. Okay.

14 A. The finding that nicotinic receptors were
15 upregulated had just occurred in ninety -- in the
16 '80s, and the reason for that was unknown, and so we
17 were addressing whether this --

18 Well, there was a hypothesis that it was this
19 desensitization ability of nicotine which allowed it
20 to act as an antagonist or a blocking relation on the
21 receptor which led to that, because that is a
22 characteristics of a lot of block receptors, so we
23 tried to compare the doses that were required to
24 upregulate receptors in rats with the concentrations
25 that we found were necessary to upregulate -- to

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1 cause desensitization, and there was not a good
2 correlation, so it looked like you could get
3 desensitization at doses which did not cause
4 upregulation. So our conclusion there is that it is
5 not desensitization that leads to the upregulation
6 effect.

7 Q. What does?

8 A. I think there is a second component which occurs
9 at higher concentrations which is called receptor
10 inactivation, which a couple of people have
11 addressed. It's a kind of a new theory of what
12 receptors do when they're stimulated by nicotine.
13 The low sensitization is a very low, readily
14 reversible effect, but an inactivation effect can
15 take place which is much longer acting, very
16 difficult to reverse. And I think it's an
17 inactivation effect that produces this, and I've just
18 submitted a paper which hasn't been published yet on
19 the ability of nicotine to inactivate receptors. So
20 that this effect cannot be recovered within even five
21 hours of nicotine removal; there's still a decrease
22 in response of about 50 percent in receptor activity.

23 Q. At what dose are receptors inactivated as
24 theorized by your latest study?

25 A. Higher concentrations of about 30 to 50 times

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1 higher than causes desensitization. We're getting
2 into the range that will stimulate receptors now, so
3 at stimulating concentrations of nicotine you can get
4 this inactivation effect, not at the lower
5 desensitization concentrations.

6 Q. And yet the inactivation threshold is lower than
7 the activation?

8 A. Probably a little bit, although the newer
9 methodology for measuring activation, as people get
10 more refined techniques, this concentration is pushed
11 a little bit lower and a little bit lower, so now
12 it's down into the -- to the -- we call it
13 submicromolar range, where nicotine can stimulate
14 neurotransmitter release, whereas 10 years ago I
15 think people would have said that it required 10
16 times higher concentrations. So it's in that range.
17 The inactivation concentration and the stimulating
18 concentration are close.

19 Q. One of the things you conclude in the May '97
20 paper is that it appears that higher bolus injections
21 are more effective at producing upregulation than
22 more frequent injections at lower doses.

23 A. Correct.

24 Q. What implication or meaning does that have in
25 terms of cigarette smoking, in your opinion?

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1 A. Well a few studies have found that nicotinic
2 receptors are upregulated in cigarette smokers. This
3 is post-mortem brain analysis again. So you would
4 expect that whatever it is about how they receive the
5 nicotine, assuming nicotine is doing it, was
6 sufficient to cause the upregulation response. We
7 found that if you put nicotine in at low
8 concentrations, for example might be with somebody on
9 a nicotine patch, it was difficult to see the
10 receptor upregulation unless you got a little bit
11 higher concentration, but you could spike with high
12 concentrations of nicotine for much shorter periods
13 of time and you could get that effect. So I guess
14 our hypothesis is this: If the inactivation is
15 leading to the upregulation, that you can inactivate
16 with high concentrations even though it's only there
17 for a short period of time. Because the inactivation
18 lasts a long time, so once you get to the
19 inactivation effect, that will last maybe days. In
20 fact, a couple of cell culture experiments have taken
21 these out for many days and they can't seem to
22 reverse this inactivation, might even be
23 semi-permanent, until you make new receptors. The
24 receptors break down at a certain rate. But if you
25 put it in at low concentrations, if you don't reach

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1 that inactivation effect, even though it's there all
2 the time, you may not get the upregulation. So --

3 I don't know right now how that would relate to
4 the cigarette smokers, but I guess you would say that
5 because they do have receptor upregulation, they are
6 reaching the concentrations that will inactivate some
7 of their receptors, again assuming it's the
8 inactivation that causes the upregulation.

9 Q. Uh-huh. In this paper you say at one point, "It
10 appears that the daily nicotine dose is an important
11 consideration, but the manner in which the dose is
12 administered is even more important."

13 A. Right.

14 Q. Route of administration. Is that what we're
15 talking about there?

16 A. Right.

17 Q. Is it your opinion that there are in fact
18 differences in terms of nicotinic effects based on
19 the route of administration?

20 A. Yes.

21 Q. And in terms of effect, compare and contrast, if
22 you will, inhalation, transdermal. Just those two
23 for now.

24 A. Well the statement there was the same daily
25 dose, so we were giving a dose, for example, 2.4

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1 milligrams per kilogram. If you spread that out over
2 a whole day, continuously, like you might see with a
3 patch -- or we used an infusion pump -- then
4 obviously your blood level is going to reach a steady
5 state and remain fairly constant. At a --

6 If you give that in, let's say, cigarette
7 smoking as you said, or a bolus injection type of
8 thing, you would go much higher than that
9 transiently, but the metabolism would be such that it
10 would actually go below the steady-state level for
11 most of the time. So you're only above that steady-
12 state level for -- for a short -- depends upon how
13 much you give and how often, but you might not -- you
14 might be below it more than you're above that
15 concentration. But that's the effect that seems to
16 cause the upregulation.

17 Now as far as -- and I'm just discussing the
18 receptor upregulation effect here.

19 Q. Yes.

20 A. When you said "effect," if you're talking about
21 what consequences that has for neurotransmitter
22 release or things like that, --

23 Q. We will get to that.

24 A. -- I'd have to speculate. But for upregulation,
25 it appears that it's more important to reach the high

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1 concentration transiently than it is to put that same
2 dose in at a steady-state concentration.

3 Q. In 1987 you and Dr. Carr and Anne Garner
4 published in the Journal of Neurochemistry --
5 A. Neurochemistry.

6 Q. -- a paper entitled "STIMULATION OF DOPAMINE
7 RELEASE BY NICOTINE," in the rat brain basically.
8 You concluded there that nicotine is acting via a
9 true physiological process. Do you believe that to
10 be the case?

11 A. Yes. And on a -- I don't know what you mean
12 by --

13 What I meant when I said the "physiological
14 process" is that it was a calcium-dependent receptor-
15 mediated process, so it's working through a calcium-
16 dependent effect, which means that if you -- kind of
17 complicated, but if you leave the calcium out, you
18 don't get the effect. That would show that it was a
19 non-physiological release. I mean you might be
20 breaking a tissue open, transmitter might be leaking
21 out through the membrane somehow like that, and
22 nicotine will do that at high concentrations.

23 Q. All I wanted to really establish with you was:
24 At least as of this writing, you were satisfied that
25 nicotine acts as a true physiological process.

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1 A. It's acting through the physiological process,
2 right.

3 Q. In the introductory paragraph to that paper you
4 write, "In addition, there is evidence that the
5 dependence, tolerance, and withdrawal symptoms
6 characteristic of long-term cigarette smoking are as
7 a result of the actions of nicotine." And you have
8 citations.

9 Did you believe that to be the case at that
10 time?

11 A. There is evidence, yeah.

12 Q. Is that your belief?

13 A. There's --

14 Yeah, that's my belief.

15 Q. We haven't up to this point characterized
16 dependence with adjectives such as mild, moderate or
17 severe.

18 A. Uh-huh.

19 Q. Let's do that.

20 A. Okay.

21 Q. Are there recognized scientific standards, if
22 you will, for gradations of dependence?

23 A. Well there were with the DSM IIIR because they
24 categorized it as mild, moderate or severe depending
25 upon how many of those nine criteria were satisfied.

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1 I don't exactly remember numbers, but three produced
2 mild dependence, and, oh, six or something produced
3 moderate, and seven or eight was severe dependence.
4 And so there were those categorizations based on
5 those nine criteria.

6 Q. You accept the phenomenon of dependence in a
7 general sense; right?

8 A. Yes.

9 MR. NIMS: Objection.

10 Q. You accept the phenomenon of addiction in a
11 general sense.

12 MR. NIMS: Objection.

13 A. Yes. In a general sense, yeah.

14 Q. Do those two phenomena ever overlap if we apply
15 mild, moderate and severe adjectives to them?

16 A. Well I think a good definition of addiction is
17 the severe spectrum on the dependence continuum.

18 Q. That's my question.

19 A. Yes.

20 Q. So that if we were on a continuum of mild to
21 severe dependence, addiction, as far as you are
22 concerned, would overlap at the severe end of
23 dependence?

24 A. The addiction would be the severe end of
25 dependence.

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1 Q. Addiction is the severe end of dependence.

2 A. I think if somebody is -- has that severe
3 dependence, then you could use the word "addiction."
4 I mean it's used so often that if you're going to
5 apply it to something, I think that's the place to
6 put it. I think you could easily get along without
7 using the word "addiction" at all for -- for drugs
8 and just use different amounts of dependence.

9 Q. And what are the characteristics, as you define
10 them, for the difference between mild, moderate and
11 severe dependence?

12 A. I would say it is how severe the withdrawal
13 symptoms are, how much physical dependence this
14 produced, which goes along with the withdrawal
15 symptoms, how much psychological reward or effects are
16 produced, the extent of the neurochemical effects, if
17 you can measure those on transmitter release, really
18 the extent of self-administration, the compulsiveness
19 of the drug use. There are a lot of things that you
20 could probably put in there to show that, yes, these
21 are signs of a very severe dependence to a particular
22 drug.

23 Q. Are you familiar with the Fagerstrom scale or
24 test --

25 A. Yes.

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- 1 Q. -- for dependence?
- 2 A. Roughly. But I'm not a real expert on it
- 3 without seeing it again.
- 4 Q. Do you regard that as an accepted means of
- 5 defining or quantifying or qualitatively describing
- 6 dependence?
- 7 A. I don't know. I'd have to --
- 8 I haven't looked at that for a long time. I
- 9 know it's commonly referred to as a scale for
- 10 dependence.
- 11 Q. Do you have an opinion as to whether cigarette
- 12 smoking produces withdrawal symptoms on cessation or
- 13 efforts to stop?
- 14 A. I would say it does.
- 15 Q. And can you characterize those as mild, moderate
- 16 or severe?
- 17 A. The withdrawal symptoms I would say are
- 18 relatively -- relatively mild.
- 19 Q. Can that vary from person to person?
- 20 A. Oh, certainly. In general I'd say they're mild.
- 21 Q. Okay. And characterize for me, if you would,
- 22 the physical dependence that you believe is present
- 23 in cigarette smoking.
- 24 A. I would say that's mild.
- 25 Q. There is in fact a neurochemical effect created

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1 from the smoking of cigarettes?

2 A. Yes.

3 Q. Can you characterize that in any qualitative
4 way?

5 A. Mild.

6 Q. How about the issue of self-administration, is
7 that a factor, in your judgment, in cigarette
8 smoking?

9 A. Well with cigarette smoking, it's hard to assess
10 it. I mean only humans do that, so you're
11 self-administering --

12 I think of self-administration as a drug kind of
13 behavior, and for nicotine self-administration it's
14 certainly mild with humans and animal subjects, but
15 for cigarette smoking it's obviously pretty
16 compelling, and that would just be about humans.

17 Q. Does it involve compulsive behavior as you see
18 it?

19 A. Yes.

20 Q. And tolerance, does tolerance have a role to
21 play in cigarette smoking or nicotine?

22 A. Again, I think it's a very mild role.

23 Q. Do you think anyone can quit smoking?

24 A. I don't know.

25 Q. Do you think everyone can quit smoking?

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1 A. I -- I don't know. I mean I -- I take that
2 back. I do think your first question, does anyone --
3 Can anyone quit smoking? Yes, --
4 Q. Can everyone?
5 A. -- there's been many examples of that.
6 But can everyone quit smoking? I don't know.
7 Q. I take it that the university hospital there has
8 a smoking-cessation program at Louisville?
9 A. I don't know whether they have a program
10 designated as such. They may well have one. I
11 don't -- I'm not aware of one. I think that's
12 treated more in the Family Practice Clinic by the
13 individual physicians. I don't know whether they
14 have a clinic designated as a smoking-cessation
15 clinic.
16 Q. Have you ever participated in any way in
17 Louisville's smoking-cessation efforts, whether
18 they're formal or informal?
19 A. Only, as I say, just individual questions that
20 physicians will ask me. Which is why I don't think
21 there's any program or clinic; I've never heard of
22 one that's a formal smoking cessation.
23 Q. How about in the community in Louisville, have
24 you ever participated or been asked to participate in
25 any way?

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1 A. No.

2 Q. Tell me if you agree or disagree with this
3 statement, that every expert organization that has
4 commented on whether nicotine is addictive has
5 concluded that it is?

6 MR. NIMS: Objection.

7 A. I -- I don't know because I don't know what
8 every one of them has said, but the ones I have seen,
9 I would agree with that.

10 Q. Including the World Health Organization?

11 A. Yes. But I don't know what they have all said.

12 Q. And the Surgeon General on at least two
13 occasions?

14 A. Yes.

15 Q. And the American Psychiatric Association?

16 A. Yes.

17 Q. And American Psychological Association?

18 A. Actually -- actually some of those have said
19 nicotine is dependence-producing.

20 Q. Where they use the term synonymously?

21 MR. NIMS: Objection.

22 A. I'm not sure about that.

23 Q. The American Medical Association?

24 A. For example, the DSM --

25 Q. Uh-huh.

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- 1 A. -- never mentions the word "addiction."
- 2 Q. The American Medical Association?
- 3 A. I would say so, yeah.
- 4 Q. Are you familiar, Dr. Rowell, with a paper
- 5 written in 1989 or 1990 that studied the attitudes of
- 6 investigators, scientists, researchers who were
- 7 funded by tobacco industry interests and their views
- 8 of whether nicotine is addictive or not?
- 9 A. No.
- 10 Q. You're not familiar with that?
- 11 A. I'm not familiar with that paper.
- 12 Q. Have you heard the statistics that, when asked
- 13 if nicotine is addictive, 83.3 percent of principal
- 14 investigators funded by the tobacco industry strongly
- 15 agreed that it was? Have you heard that statistic?
- 16 A. No, I haven't heard that statistic.
- 17 Q. And that an additional 15 percent agreed that it
- 18 was somewhat addictive?
- 19 A. I haven't heard that statistic.
- 20 Q. Let's talk about disease causation a little bit
- 21 and let me define a couple of terms for you first so
- 22 we're all using the same language.
- 23 A. Okay.
- 24 Q. For purposes of my question, I want to define
- 25 "causation" as something which is a substantial

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1 factor in bringing about an event or harm.

2 Using that definition, do you have an opinion as
3 to whether or not smoking causes lung cancer?

4 MR. NIMS: Objection.

5 Q. Put another way, is it a substantial factor in
6 producing lung cancer?

7 MR. NIMS: Objection.

8 A. Well it's not an area that I'm expert in, but my
9 personal opinion is, with that definition of
10 "causation" as a substantial factor, I would agree
11 with that.

12 Q. In both men and women?

13 MR. NIMS: Objection.

14 A. Again it's outside of my area of expertise, but
15 from my knowledge I would agree with that.

16 Q. Is it a substantial factor in bringing about
17 pharyngeal cancer?

18 MR. NIMS: Objection.

19 A. Outside of my area. I wouldn't disagree with
20 it.

21 Q. Is smoking a cause of chronic obstructive
22 pulmonary disease?

23 MR. NIMS: Objection.

24 A. Same answer, I would not disagree with that.
25 It's outside my area, but it's a substantial factor.

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1 Q. Is it a substantial factor in heart disease?

2 MR. NIMS: Objection.

3 A. Again I would agree that it's a substantial
4 factor.

5 Q. Is it a substantial factor in oral or mouth
6 cancers?

7 MR. NIMS: Objection.

8 A. With my understanding, it would be.

9 Q. Is it a substantial factor in the development of
10 esophageal cancers?

11 MR. NIMS: Objection.

12 A. I would agree with that.

13 Q. Is it a substantial factor --

14 Is smoking a substantial factor in stroke?

15 MR. NIMS: Objection.

16 A. Again, from my knowledge I would say that's
17 correct.

18 Q. Is smoking a substantial factor in the
19 development of emphysema?

20 MR. NIMS: Objection.

21 A. I would agree with that.

22 Q. Is smoking a substantial factor in the
23 development of arterial schlerosis?

24 MR. NIMS: Objection.

25 A. I'm less certain about that, but I would defer

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1 to the experts if that's the case.

2 Q. Is smoking a substantial factor in intrauterine
3 growth retardation?

4 MR. NIMS: Objection.

5 A. I probably would agree with that.

6 Q. Is cigarette --

7 A. It's not a marked effect, but --

8 Q. All right. Is cigarette smoking a substantial
9 factor in the development of bladder cancer?

10 MR. NIMS: Objection.

11 A. That I don't know about. I wouldn't disagree if
12 that's what the statistics show.

13 Q. Is cigarette smoking a substantial factor in the
14 development of pancreatic cancer?

15 MR. NIMS: Objection.

16 A. Again I don't know, I'm not an expert.

17 Q. How about kidney cancer?

18 MR. NIMS: Objection.

19 A. I don't know. I wouldn't disagree.

20 Q. Stomach cancer?

21 MR. NIMS: Objection.

22 A. I wouldn't disagree.

23 Q. Cervical cancer in women?

24 MR. NIMS: Objection.

25 A. I wouldn't disagree. I don't -- I don't know

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1 for sure.

2 Q. How many compounds in cigarettes --

3 MR. GINDER: Excuse me, counsel. I also
4 want to note an objection on a foundation basis to
5 the whole line of questions about causation.

6 Q. How many compounds in tobacco smoke are known to
7 be carcinogenic?

8 MR. NIMS: Objection.

9 A. I can't give you an exact number.

10 Q. Give me a range.

11 MR. NIMS: Objection.

12 A. Well I know of one compound that has been shown
13 to be carcinogenic.

14 Q. Which one?

15 A. Benzo-a-pyrene. And there are probably others.
16 And I can't really comment on the amounts that are
17 delivered in cigarette smoke as far as whether that
18 would be sufficient. But it's, again, outside of my
19 area of expertise.

20 Q. How many compounds in tobacco smoke are
21 pharmacologically active?

22 A. That is a very broad question. I would say --

23 I mean if I had to answer, I'd say most of them,
24 because at -- at a certain concentration, almost any
25 compound would be pharmacologically active on some

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1 system of the body. So it's hard to answer that.

2 Q. How many compounds in tobacco smoke, in your
3 judgment, are toxic?

4 MR. NIMS: Objection.

5 A. That's --

6 Again that's a concentration-related term, and
7 everything is toxic at a certain concentration.

8 Q. Is nicotine --

9 A. So all of them.

10 Q. Yeah.

11 Is nicotine toxic?

12 A. Yes.

13 Q. Is it regarded by some as a poison?

14 A. Yes.

15 Q. Taken in sufficient quantities, it can kill.

16 A. Yes.

17 Q. Is it your understanding that there are
18 compounds in tobacco products and tobacco smoke that
19 are mutagenic?

20 A. That's outside of my area.

21 Q. Do you have an opinion as to whether or not
22 secondhand smoke is a cause of disease?

23 MR. NIMS: Objection.

24 A. I have a personal opinion. Again it's not an
25 expert opinion.

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1 Q. What's that?

2 A. That the --

3 I think the secondhand-smoke dangers are greatly
4 exaggerated, but I'm not going to fight with the
5 experts on that. I think that the relative hazard of
6 secondhand smoke has been overblown, but that's just
7 a personal opinion. I can't give expert testimony on
8 that.

9 Q. Do you believe that the cause of the role of
10 secondhand smoke is overblown in terms of lung
11 cancer?

12 MR. NIMS: Objection.

13 A. That's a personal opinion.

14 Q. You think it is.

15 A. That's my personal opinion.

16 Q. As to that particular disease state.

17 A. Yes.

18 Q. In the course of your review of tobacco company
19 documents, did you see any documents in which there
20 was a recognition that cigarette smoking is capable
21 of producing disease?

22 A. I believe that was stated by numbers of people,
23 yes.

24 Q. And do you know when the earliest time was that
25 that was stated?

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1 MR. NIMS: Objection.

2 A. I couldn't tell you about that.

3 Q. I'm sorry, I didn't hear you.

4 A. I couldn't recall exactly what the dates were
5 for those statements that I saw.

6 Q. Following your habit of note-taking, would you
7 have noted that in the notes that have been produced?

8 A. Not necessarily, because I was focusing on,
9 again, nicotine pharmacology, which is my area, and
10 what was known about nicotine I probably saw. I -- I
11 know I saw statements related to their wanting to
12 change the tar/nicotine ratios because they were
13 cognizant of the fact that there were assumed health
14 hazards with other things in the tobacco smoke, so
15 in -- as it related to the tar/nicotine ratios, I
16 would be aware of it. But whether it was just as far
17 as cigarette smoking and disease, I was not focusing
18 in on that. In fact when I wrote the review we
19 talked about and when I went through the documents, I
20 made it clear up front that I was not going to get
21 into the effects of cigarette smoking on cancer,
22 disease, or anything like that. And we didn't
23 discuss it in the review and I really didn't focus on
24 it in the documents. It's not my area of expertise.
25 Q. Was it particularly part of the assignment from

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1 either the consulting firm or Mr. Nims when the
2 historical review was first conceived that disease
3 causation was an area that was not to be covered?

4 A. No.

5 MR. NIMS: Objection.

6 A. That was my --

7 That was my proposal that we not do that. And I
8 wasn't prepared to do it.

9 MR. SILBERFELD: Do you want to withdraw
10 the objection? It's a good answer.

11 MR. NIMS: I agree it's a good answer.

12 THE WITNESS: I mean that's -- I said right
13 up front that I was not prepared to go into the
14 voluminous literature on cigarette smoking and any
15 kind of disease processes.

16 Q. In the course of preparing the historical
17 review, you looked at a number of decades, did you
18 not, in the development of knowledge about nicotine
19 and its effects?

20 A. Yes.

21 Q. Is it fair to say that knowledge about nicotine
22 and its effects evolved over the course of time that
23 you studied?

24 A. Yes.

25 Q. And what period of time did you study in the

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1 historical review?

2 A. Well we started looking at nicotine when it was
3 first isolated in the mid-1800s, and not really too
4 much significant work was done in the 1800s, but we
5 looked at some work on the peripheral nervous
6 system. I mean we had no direction, so we just
7 started looking at where nicotine was found to work
8 in peripheral tissue and heart tissue, but we
9 centered our focus on the central nervous system.

10 But maybe the major studies probably began in
11 the late '40s, '50s. And certainly after the '64
12 Surgeon General's report, the '60s really saw an
13 explosion of research on nicotine.

14 Q. And not having the benefit of looking at every
15 single page of your notes, let me just ask the
16 overall question of you: Is it your opinion that
17 none of the information contained in any tobacco
18 industry document you saw would have contributed any
19 new piece of information to the evolving knowledge
20 about nicotine and its effects for the period that
21 you looked at?

22 A. No, that's not my opinion --

23 Q. Okay.

24 A. -- that it would not have contributed any new
25 information.

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1 Q. Some documents, some studies, some reports that
2 you saw would have contributed to the evolving
3 medical knowledge about nicotine and its effects.

4 A. Yes.

5 Q. And in the interest of time, can you point me to
6 some examples of that?

7 A. "Fate of Nicotine in the Body" was one --
8 interesting -- that we came to in the second page.

9 Q. The one that we looked at this morning.

10 A. Yes.

11 There were a couple of other studies done by
12 Battelle, HIPPO I, HIPPO II, as I remember, where
13 they were looking at the effects of nicotine on
14 neuroendocrine function, comparing it to a drug
15 called reserpine. Other than that, the -- the
16 self-administration of DeNoble would have contributed
17 some new information. Those are probably the main
18 ones because there were other -- very few other
19 studies of publishable quality with data,
20 experimental design, things like that. There --
21 there were probably some others in there, little
22 bits, but those are the ones that strike my mind
23 right now.

24 MR. SILBERFELD: Well let's take five.

25 (Recess taken.)

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1 BY MR. SILBERFELD:

2 Q. Dr. Rowell, before the break you indicated to me
3 that a number of the studies in the tobacco documents
4 that you looked at would have provided new
5 information, and you identified some. You have
6 something open before you in your notes. Is this
7 identifying one of them?

8 A. No. I just was --

9 Q. Oh.

10 A. -- going through here. I did see a couple of
11 others where I wrote down "At least they have some
12 results." I saw one that said "Finally some research
13 results," things like that.

14 Q. Which one is that?

15 A. I don't know. I just passed it.

16 Q. Oh.

17 A. And I don't know if it was a good one or not.

18 All I know is that so many of these studies didn't
19 have any experiments, they didn't have any data; they
20 were just marketing things or what they planned to do
21 or reviews or things like that, just document after
22 document, and because my goal was looking for new
23 information that could be documented by evidence,
24 they really didn't provide much information. So when
25 I saw that --

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1 I mean I could go through and probably --

2 Well you have them, too. You could see my

3 notes --

4 Q. Right.

5 A. -- if you ever get time.

6 Q. For those studies that you saw that provided new

7 information that would have somehow advanced the

8 state of knowledge about nicotine and its effects,

9 did you see any evidence whatsoever that those things

10 were made public?

11 MR. NIMS: Objection, mischaracterizes the

12 testimony.

13 A. You said "provided new information," so there

14 are some in there that did that. And I haven't

15 seen --

16 I don't know whether they were published or not.

17 Q. Without regard to whether they were published,

18 did you see any information, any evidence at all that

19 they were made public?

20 A. Oh, made public. I have no way of knowing that.

21 Q. Had the reports or studies that you saw that

22 provided new information been made public, you're

23 satisfied, are you not, that they would have advanced

24 the state of knowledge of nicotine at the time?

25 A. They would have provided information. I don't

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1 think they would have changed the progression of our
2 understanding of nicotine at all. I don't think they
3 would have led to an earlier Surgeon General's report
4 or, later, studies on nicotine and nucleus accumbens
5 or studies on self-administration or anything like
6 that. So that's what I mean by they wouldn't have
7 led to significant advance. But they would have
8 provided information. So there's a difference.

9 Q. In your original expert's report that you got in
10 early July, there was a list of documents reviewed by
11 you that bore a date of June 27, 1997.

12 A. Right.

13 Q. And then yesterday along with your notes we got
14 an amended version of the same thing dated as of
15 August 20th.

16 A. Right.

17 Q. I tried to compare the two and found it rather
18 difficult at best.

19 A. Yeah.

20 Q. Can you explain to me the system that produced
21 the second, more-recent version as distinguished from
22 the first? Because I cannot make out what one has to
23 do with the other, if anything.

24 A. Right. The first one was done because I had to
25 include it with the expert report, so I went through

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1 basically in the order that I received the documents
2 and just put them down there, starting with B.A.T. I
3 did -- I did group them by company.

4 Q. Yes.

5 A. But they were pretty much in the order that they
6 were in the stack that I went through, and so they
7 are really not in any order except they may be
8 semi-chronological. "Fate of Nicotine in the Body"
9 is probably early on, things like that.

10 More recently I have found, because I needed to
11 go back when I got the Hurt expert report, and I
12 started saying I've seen this before, it was very
13 difficult for me to do that, but because they were
14 already in this format, I was able to sort on the
15 Bates-number column, and I went through my
16 handwritten notes and added the Bates numbers. So
17 now this newer version is sorted by the Bates
18 numbers. Although I've noticed recently that there
19 is a little bit of a problem there because I sorted
20 by -- I sorted by number rather than by text, so --

21 You'd have to understand the word processing
22 system. But if you sorted -- if you say it's a
23 number field, then it would put 600 in front of
24 2,000, but if you sorted by text it would put 2,000
25 first because two comes before six.

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1 Q. Uh-huh.

2 A. So even that's a little bit out of order if you
3 go back to some of them. But that's why it's going
4 to be real --

5 I mean it could be done, but the first version
6 was of little benefit to me except to provide
7 information with my expert report about what I had
8 seen, but I can't use that very well to locate my
9 note that I have on that document, whereas this I can
10 go and find the note that I have on the document.

11 Q. "This" being the more-recent version.

12 A. The more-recent one, right.

13 Q. If I wanted to find out what documents you
14 looked at after June 27th and before August 20th,
15 other than sitting with the two next to each other
16 and making the comparisons, is there any way to find
17 out?

18 A. Probably, yeah. I think I could --

19 If I was given that assignment, I could put that
20 into a database where I have, for instance --

21 One way I'm thinking about is to put it in where
22 I have my reference manager system, and that has the
23 ability to identify duplicate documents, because
24 sometimes you -- it will identify duplicates and it
25 will give you a whole list of duplicates, and you

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1 could then find the unique ones. That's off the top
2 of my head one way I could do it.

3 I mean the other way to do it, I guess, would be
4 to sort the old file on the Bates number, and I think
5 that old version probably still exists as a backup
6 copy of the secretary in the office that actually put
7 those in. And I have been adding since then on my
8 computer. So she has in the office an old version,
9 and I might be able to do something with that.

10 Q. The first version of the documents you reviewed
11 contains the fields company, Bates number, date,
12 title, and author.

13 A. Right.

14 Q. The more-recent version contains a code field,
15 and some of the documents have filled in next to the
16 code field either a letter, such as an H, or a series
17 of numbers.

18 A. Uh-huh.

19 Q. Can you explain to me what those are?

20 A. Yeah. Those help me just locate the documents.
21 Lorillard, for example, they all came in a notebook
22 with little number tabs in front of the different
23 documents, so I could go to a Lorillard notebook and
24 if it says number 16, then on the tab 16 I would find
25 that document. The B.A.T. documents came in a big

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1 stack where I had to go through and -- so there's --
2 there's no notebooks. Some of the Philip Morris were
3 also in notebooks, so I have PM whatever. In fact
4 those PM in the hundreds were all up at the top
5 left-hand corner of the documents when I got them,
6 they're like PM 100 and 200, whatever. Then there
7 are other PMs that have just a number that was in the
8 notebook. The H's stand for the fact that that was
9 part of the Hurt deposition. If it has a plus H,
10 that means I already read it, I already had it, but
11 it's also in the document -- in the Hurt.

12 Q. Now among the documents that you looked at from
13 the tobacco companies were memos and other writings
14 that proposed that research be done into certain
15 health effects.

16 A. Right.

17 Q. As to those proposed research projects, did you
18 form an opinion as to whether or not those projects,
19 had they been completed, would have advanced the
20 state of knowledge about nicotine and its effects?

21 A. Well it's hard for me to answer that because I
22 don't know how well they would have completed the
23 proposal. The proposals were fairly broad-based a
24 lot of times, and if they had actually been able to
25 answer the questions, sometimes I would have thought

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1 that would have been a good project.

2 I can't think of a specific example, but they
3 might propose something, we're -- we're going to
4 attempt to find out what the threshold dose of
5 nicotine in a cigarette might be for smokers or
6 something like that, and if they could identify a
7 number, which I never found that they could do, that
8 would have been interesting information. Again I
9 don't think it would have been a breakthrough because
10 I'm sure people understand that there is a threshold
11 of some type. But it would have provided
12 information, yeah.

13 Q. To the extent that research projects were
14 proposed in the various company documents you looked
15 at, did you ever determine whether those proposed
16 research projects were in fact undertaken and
17 completed?

18 A. I have not compared as I went through whether
19 this was related to a proposal that they made
20 before. I just looked at the document to see what
21 they did. So if it was a research project, I took it
22 on face value, whether they proposed it earlier or
23 not. I didn't --

24 Q. And you don't know, extrinsic of the documents,
25 whether the work was ever completed --

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1 A. No.

2 Q. -- or published --

3 A. No.

4 Q. -- or what the findings may have been.

5 A. No. I just haven't put that effort into it.

6 Q. Do you have this list with you on disk by any

7 chance?

8 A. No, I don't.

9 Q. One other thing you talk about in your report at

10 page two is the statement that you're prepared to

11 testify about the relevance and significance of the

12 reports of various statements made by employees of

13 the tobacco industry. Do you recall that, sir?

14 A. Yes.

15 Q. Do you have in mind specific comments that

16 you're going to make at the time of trial in this

17 case about statements made by employees of the

18 tobacco industry?

19 A. I don't have in mind specifically the comments

20 that I'll make. It depends upon what I'm asked. But

21 I read many times where individuals who I guess were

22 employees of the industry said that we realize

23 nicotine is a major component of cigarette smoke or

24 addicting or cigarette smoking is a habit of

25 addiction and things like that, and I guess I would

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1 comment on the relevance of those remarks.

2 Q. From what standpoint?

3 A. From the standpoint of what basis did they have
4 for making that statement, what data did they have to
5 support that statement, or were they using
6 terminology that was pretty much commonly used during
7 the day, and what really was the significance of
8 that, of them saying that.

9 Q. Any other examples other than terms relative to
10 addiction or statements relative to addiction?

11 A. No. Those would be the main ones that I'm
12 thinking of, because they were scattered throughout
13 the documents. Right offhand I can't think of
14 anything else, but there may be. I mean if somebody
15 asked me the relevance of a certain thing, I'd
16 comment on what I thought about it.

17 Q. Is whatever comment you have to make limited to
18 the documents you reviewed?

19 A. About --

20 Q. About employees of the industry's statements.

21 A. Yes. I don't have any other basis for knowing
22 anything else about what they said. I mean --

23 Q. And are your comments about the relevance and
24 significance of those statements contained within
25 your notes?

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1 A. No. I would identify the statements a lot of
2 times with quotes, put where it was, but I wouldn't
3 put down --

4 Sometimes I may have said where does -- you
5 know, why does he say this or something like that in
6 the note. But most of the time I wouldn't comment
7 extensively on it.

8 Q. What's the most efficient means of finding out
9 each and every statement that you intend or may
10 comment upon that was made by an employee of the
11 industry?

12 A. Well I guess I hadn't expected that I would be
13 initiating the conversation. I mean I -- I -- I
14 expected to have somebody else ask me with a
15 statement, and I would maybe look it up or something
16 like that, comment on it then, rather than have me
17 present what I thought the comments meant through an
18 individual document.

19 Q. Are there any notations in your notes where we
20 could somehow identify which particular statements
21 you're prepared to comment on, or would we have to go
22 through every single document that you looked at to
23 make that determination?

24 A. Well I haven't really prepared any individual
25 things to comment on. As I say, I'm -- I would be

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1 prepared to comment on whatever it is that I've seen
2 in the documents, so anything in there I'd be
3 prepared to comment on. I might not have an opinion
4 on it or I might say I don't know, but I haven't
5 gotten a list of things together that I think are
6 things that I'm going to initiate a conversation
7 about.

8 Q. Let's spend a little while talking about
9 pharmacokinetics. All right?

10 Define for me the term "buffering capacity of
11 the lung."

12 A. That's the ability of --

13 Buffering capacity is the ability to resist a
14 change in pH, so the buffering capacity of the lung
15 would be how much challenge of a difference in pH
16 from normal physiological pH the lung would be able
17 to handle. So that would be the capacity.

18 Q. How does the buffering capacity of the lung
19 relate, if at all, to nicotine and its actions on the
20 body?

21 A. It doesn't really relate to the actions of
22 nicotine in the body.

23 Q. What does it relate to in terms of your overall
24 opinions?

25 A. It relates to the ability of the lung and really

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1 almost any biological fluid in the body to maintain
2 itself at pH 7.4, which, with nicotine, relates to
3 the percent which is going to exist in the free base
4 compared to the charge form.

5 Q. Your report says that you're prepared to present
6 information on the uptake of nicotine from the
7 inhalation, buckle, and intravenous routes. What
8 will you say about that?

9 A. Well I would say that the uptake would be very
10 rapid from the inhalation and the intravenous routes,
11 and fairly rapid through the buckle route, compared
12 to oral ingestion or transdermal administration or
13 subcutaneous administration.

14 Q. Which would be regarded as slow?

15 A. Slower, yes.

16 Q. What information will you present, if asked,
17 about the brain and blood levels of nicotine in
18 humans?

19 A. In cigarette smokers I will, if asked, testify
20 that there is a rather large range for different
21 people in the studies that have been done, ranging
22 from the low, let's say, five to 10 nanograms per mil
23 range all the way up to 70 or 80 nanograms per mil,
24 and that would be a peak concentration. And that's a
25 blood level, again, not a brain concentration, which

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1 we really don't know what it is.

2 The fluctuations of those blood levels depend
3 upon the frequency of smoking. I know what the
4 half-life of nicotine is, so I know how it's
5 metabolized overnight when a cigarette smoker doesn't
6 smoke. I mean any questions that I can answer, I'll
7 be prepared to answer about how the blood levels
8 change or fluctuate.

9 Q. We've talked about the desensitization aspect of
10 nicotine. Let's talk about the actions to
11 stimulate. What will you say about that, the
12 stimulating action?

13 A. Well again, the functional ability of nicotine
14 to produce effects is really only able to be measured
15 in experimental animals, particularly with specific
16 neurotransmitter systems, and so I will base my
17 comments on experimental studies that have been done
18 in animals on neurotransmitter levels that are
19 produced from nicotine administration.

20 Q. Your own work?

21 A. If I'm asked about my own work. My work is in
22 vitro, so I haven't used the whole animal.

23 Q. Right.

24 A. But I can --

25 In my work, it's probably more appropriate for

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1 characterizing how different classes of drugs work at
2 specific concentrations, because in an animal you
3 lose the ability to exactly measure concentration,
4 whereas if you do it in a test tube, more or less you
5 have the ability to put the drug in exactly different
6 concentrations and compare the drugs.

7 Q. Your report says that you're prepared to comment
8 on the ability of nicotine to release various
9 neurotransmitters, including dopamine.

10 A. Right.

11 Q. Explain that, if you would, in lay terms as you
12 would to a jury if they were sitting here today.

13 A. I would describe how nicotine and maybe other
14 drugs produce an increase in neurotransmitter
15 levels. And they all work a little bit differently,
16 but nicotine works by acting on these receptors that
17 exist on the nerve cells, and that produces a
18 stimulation of the release into the synaptic cleft.

19 I don't know whether I would want to get too much
20 more complicated than that for a jury. It's --

21 I would think I would maybe go into the -- into
22 the levels of neurotransmitters and the number of
23 neurotransmitters that have -- are affected or have
24 been shown to be affected by nicotine, five or six
25 different neurotransmitters that are released.

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1 Q. And when you say "levels," what are you
2 referring to?

3 A. The magnitude of the effect, I guess you'd say,
4 over a baseline release. I'm --

5 What percent of an increase you can get with
6 nicotine over a normal basal release which takes
7 place in nerve cells all the time. There's a certain
8 basal, low-level release that takes place. How much
9 can that be stimulated with nicotine?

10 Q. How much can it?

11 A. It depends upon the neurotransmitter, but
12 it's --

13 You could get a 50 percent to maybe a hundred
14 percent increase in the amount of neurotransmitter
15 release from the tissue. And that's again in vitro
16 work that I can do in my lab, but it relates pretty
17 well to the whole-animal work that can be done.

18 Q. So depending upon the neurotransmitter involved,
19 one can get between 50 and a hundred percent increase
20 in response?

21 A. In the amount of neurotransmitter release.
22 That's the response we're measuring, yes.

23 Q. Yes.

24 Q. And that in vitro work correlates rereasonably
25 well with the in vivo work?

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1 A. Pretty well, yeah. The time frames are quite
2 different because in the in vitro you can measure
3 very good -- good resolutions within seconds of how
4 the neurotransmitter comes out; in in vivo work you
5 have to collect for fairly long periods of time, so
6 you're analyzing a broad spectrum so you really can't
7 see the resolution that you can in vitro. But as --
8 as well as you could compare those two methods, it
9 probably relates pretty well.

10 Q. Is there any human data, post mortem or
11 otherwise, that correlates to this information?

12 A. Not to that information, because you can't do
13 the functional studies in post-mortem tissue because
14 they're -- it's dead. This has to be living.

15 Q. Have you considered the comparative effect of
16 nicotine and other substances that have effects on
17 neurotransmitter release?

18 A. Well I've done it in my laboratory and I've read
19 other articles that compare these compounds.

20 Q. Okay. And is there a comparison to be made
21 between nicotine and other substances?

22 A. Yes. A comparison can be made, yeah.

23 Q. What other substances have you studied yourself?

24 A. The ones that I've studied are cocaine,
25 amphetamine and caffeine, and those plus others have

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1 been studied in other investigators' laboratories.

2 Q. Can you just, perhaps with reference to your CV,
3 direct me to the paper of yours that compared
4 cocaine, amphetamines and caffeine?

5 A. I only have --

6 I have an amphetamine table in one of the
7 papers, and I think that would be the '87 nucleus
8 accumbens paper.

9 Q. The '87 which?

10 A. The one on the nicotine effect on nucleus
11 accumbens. But --

12 Q. And that has a table in it that includes --

13 A. I think there's a -- there's an amphetamine,
14 yeah, as I remember 10 years ago what we did there.
15 But I have not published a direct comparison with
16 those drugs.

17 Q. I'll look for it at the break.

18 A. Yeah.

19 Q. What conclusion did you reach about the
20 comparative effect of nicotine and other substances?

21 A. Well it's fairly easy to demonstrate that
22 nicotine is rather weak, particularly compared to
23 amphetamine, which is the most active drug in my
24 system, with 10 or 20 percent of the effect of
25 amphetamine. Cocaine works differently, so it's more

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1 difficult to do in a superfusion system. So -- but
2 in a -- in a static incubation system, nicotine is
3 weak as compared to cocaine.

4 Q. Are you of the opinion that nicotine and cocaine
5 produce overlapping patterns of activation in the
6 brain?

7 A. No, I think I would disagree with that
8 statement.

9 Q. So you would be of the view that they do not act
10 on common substrates. Different substrates instead.

11 A. They act on some common substrates, but nicotine
12 acts in areas where cocaine doesn't act.

13 Q. But you would agree that they do act on some
14 common --

15 A. Some common, yes.

16 Q. -- some common neurosubstrates.

17 A. Yes.

18 Q. Are you familiar with the work of Pich and
19 Pagliusi?

20 A. I don't recognize that offhand, but --

21 Q. Published in Science in January of 1997?

22 A. Oh, yes, I did see this article because I
23 remember the title, "COMMON NEUROSUBSTRATES."

24 Q. That's consistent with your answer about the
25 common neurosubstrates between nicotine and cocaine?

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1 MR. NIMS: Objection.

2 A. Well I commented --

3 Q. At least in part?

4 A. -- there are common neurosubstrates.

5 Q. And different ones as well.

6 A. Yes.

7 Q. What's the significance, Dr. Rowell, if any, to
8 you of the fact that there are common neurosubstrates
9 as between nicotine and cocaine?

10 A. Well I think that the reinforcing properties
11 that nicotine has demonstrated in the mild effects in
12 humans and some of the effects in animals are
13 probably related to the common substrate of dopamine
14 release in these certain mesolimbic areas of the
15 brain. So that would be the significance, that
16 nicotine, like other drugs, can raise dopamine
17 levels.

18 Q. Does the fact that there are common
19 neurosubstrates affect your view at all as to whether
20 or not nicotine is mildly, moderately, or severely
21 dependence-producing?

22 A. No. And I think this -- I don't exactly
23 remember --

24 I've only scanned that paper, I haven't looked
25 at it, because I've --

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1 Q. I'm happy to have you look at it.

2 A. Yeah. Let me look at it quickly and see.

3 This is a lever-pressing.

4 (Discussion off the record.)

5 A. From a very brief review of this, it looks like,

6 as I've suspected, nicotine will in fact release

7 dopamine. In this case it's binding in the nucleus

8 accumbens.

9 Autoradiograms. Looks to me that nicotine is

10 closer to saline than it is to cocaine on this one

11 graph, but I'd have to read the paper.

12 Q. In terms of its dependence-producing qualities,

13 how would you rate cocaine? Mildly, moderately,

14 severely?

15 A. I'd say that was strongly dependence, but it's a

16 psychological dependence component.

17 Q. Not a physical one?

18 A. Not too much of a physical dependence.

19 MR. SILBERFELD: I'm only laughing because

20 you're shaking your head "yes" and "no" when he says

21 "yes" and "no." You've been at this too long.

22 Q. Would you describe cocaine as addictive?

23 A. Yes.

24 Q. And it does or does not have withdrawal

25 symptoms, in your assessment?

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1 A. Pretty mild withdrawal symptoms.

2 Q. What is it about cocaine that renders it
3 addictive by your definition?

4 A. Its euphoriant-producing properties. Its
5 positive-reinforcing properties are so strong that it
6 produces a moderate to severe degree of dependence on
7 continuing to take it to receive those euphoriant
8 effects.

9 Q. The authors in the Pich and Pagliusi paper start
10 their paper by saying, "Nicotine is critical in the
11 maintenance of tobacco smoking." Do you agree or
12 disagree with that statement?

13 A. Well I would tend to agree with it, although the
14 definitive experiments have not been done to compare
15 whether people would continue to smoke cigarettes
16 with no nicotine if they didn't have the ability to
17 get nicotine-containing cigarettes. But I would
18 probably agree with that statement, that it's
19 critical.

20 Q. Let me show you your paper in the Journal of
21 Neurochemistry, 1987. Is this the paper that talks
22 about the neurotransmitter release --

23 A. Yes.

24 Q. -- and nicotine?

25 A. Yeah.

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1 Q. Without going through the whole thing, do you
2 recall whether you compare and contrast nicotine and
3 other substances in this paper? Is this the one with
4 the graph?

5 A. Let me look at it.

6 No, it isn't. I thought it was, but it wasn't.
7 So I don't compare other substances in that paper.

8 Q. Is there one that you can think of where that
9 occurs?

10 A. Yeah. Maybe it's --

11 I'd have to look through. There's an
12 amphetamine bar in one of the papers. It may be the
13 one in the amygdala, the paper where it was released
14 in the amygdala. We've recently done a whole series
15 of experiments on amphetamine in the last six or
16 seven months for another doctoral student. She
17 actually did the work, but -- so I mean I have data
18 on those comparisons, but it's not published. May --
19 we may very well publish it.

20 Q. And what are the findings?

21 A. But I -- I --

22 Well, nicotine is a little bit more potent than
23 amphetamine but much less active, is the best
24 characterization I could say about the two.

25 Q. What do you mean by "less active?"

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- 1 A. It produces much less of a response on the
2 amount of dopamine released when you compare them
3 side by side using the same protocol.
- 4 Q. Do they act on the same substrates?
- 5 A. Well they act on the dopamine nerve terminal --
- 6 Q. Right.
- 7 A. -- but they act differently. Amphetamines do
8 not act on the nicotinic receptor.
- 9 Q. And nicotine does.
- 10 A. Yes.
- 11 Q. Your report says you are prepared to essentially
12 compare nicotine with morphine and its actions in
13 terms of producing a number of psychic and
14 neurochemical effects in the brain.
- 15 A. Yes. That won't be any of my work. I just
16 worked from other people.
- 17 Q. Compare and contrast morphine and nicotine for
18 me insofar as it relates to the neurochemical effects
19 on the brain.
- 20 A. Nicotine, again, produces less of an effect on
21 dopamine than morphine in any studies that I've done
22 where they've made direct comparisons or used the
23 same techniques for being able to make the direct
24 comparisons.
- 25 Q. They act on the same substrate?

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1 A. No, morphine acts indirectly through another
2 receptor, an opiate receptor, and only indirectly
3 releases dopamine from the terminal through
4 activating a pathway that leads down to the dopamine
5 release.

6 Q. So it produces less of an effect on dopamine?

7 A. No, it actually produces more --

8 Morphine produces more of an effect on dopamine.

9 Q. What is the significance of that comparison to
10 you, if any?

11 A. Well if you buy into the dopamine-producing-
12 dependence hypothesis, then the significance is that
13 morphine produces more dependence because of its
14 larger effect on dopamine. But morphine has effects
15 on other pathways of the brain, and I'm -- I think
16 many of these drugs of dependence work through varied
17 mechanisms, and it's a little bit simplistic to say
18 that every single drug has to come down to this one
19 dopamine pathway. Morphine has a lot of analgesic
20 properties, of course, and produces feelings of
21 euphoria, probably through the enkephalin system that
22 really may not have anything to do with dopamine. So
23 from my perspective it's a different category of --
24 Well it is classed as a different category of
25 drug. It's not a psychostimulant like amphetamine,

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1 cocaine, nicotine, caffeine; it's an opioid type of
2 compound. It works differently, blocked by different
3 receptor blockers.

4 Q. Would you regard it as dependence-producing or
5 addictive, morphine?

6 A. Addictive and dependence producing.

7 Q. And dependence producing. Strongly so.

8 A. Yes.

9 Q. Your report says that it is your opinion that
10 the pharmacological characteristics of nicotine are
11 very dissimilar from those of drugs such as cocaine
12 and others. Let's stop at cocaine. What are the
13 differences between the pharmacological
14 characteristics of nicotine and cocaine?

15 A. Well their mechanism of action is completely
16 different, first of all. Nicotine works through a
17 receptor-mediated process, and in view of some of
18 the -- not only the fact that you have a limited
19 number of receptors, but in view of the
20 desensitization and perhaps inactivation properties
21 that we've talked about, there is a self-limiting
22 type of response. You cannot get huge effects with
23 nicotine because you just don't have the number of
24 receptors available for nicotine to act. When it's
25 bound to all the receptors that are there, that's the

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1 most effect you'll get.

2 Cocaine works in an entirely different mechanism
3 by blocking the removal of dopamine that's released
4 from the synaptic cleft, and so the major step for
5 removing the neurotransmitter is blocked. Nicotine
6 does not affect that step, so whenever the dopamine
7 comes out, it can be taken up rather rapidly back
8 into the nerve terminal.

9 Q. So one significant difference between nicotine
10 and cocaine is the mechanism?

11 A. Yes.

12 Q. Are there others in terms of the pharmacological
13 characteristics?

14 A. Well, nicotine affects a lot of
15 neurotransmitters that cocaine does not affect at
16 all. Cocaine affects the monoamine transmitters,
17 dopamine, norepinephrine and serotonin a little bit.
18 Nicotine affects those transmitters plus many other
19 neurotransmitters and neuroendocrine systems. And I
20 see that the difference, if you will, in a nut shell
21 is that nicotine facilitates the release of
22 transmitters that are being released on a normal
23 process of neurotransmission; cocaine stimulates the
24 release of a very few defined neurotransmitters.
25 Q. Any other differences from a pharmacological

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1 standpoint between nicotine and cocaine?

2 A. Well I'm sure there are pharmacokinetic
3 differences, but I don't know that much about the
4 pharmacokinetics of cocaine as far as its metabolism,
5 its excretion, and things like that.

6 Q. How about the pharmacodynamic process?

7 A. Yeah, that's what I was just talking about, the
8 fact that --

9 I mean the major difference is the fact that
10 cocaine is not a receptor-mediated effect, so that
11 would be the major difference.

12 Q. Are there any other pharmacologic differences
13 between nicotine and cocaine other than the ones
14 we've discussed that you can think of at this time?

15 A. Not that I'm sure about as far as differences.
16 They probably work in different areas of the brain,
17 things like that that I could look up, but not that
18 I'm aware of at this time. I'm much more familiar
19 with nicotine and where it works, and I'm not exactly
20 sure on some of these other areas how cocaine
21 compares.

22 Q. Well is that an area, Dr. Rowell, where you
23 intend to do more work; that is, this sort of
24 comparative analysis between nicotine, about which
25 you're quite familiar, and other substances such as

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1 cocaine?

2 A. No, because I don't think those are specifically
3 germane to cocaine's dependence-producing
4 properties. I think the pharmacodynamic properties
5 on the mesolimbic area and how it works is by almost
6 everyone felt to be the characteristic of cocaine
7 that gives its dependence-producing effects, and that
8 I'm familiar with, but there may be other
9 pharmacological characteristics that are different.

10 Q. All right. How about the pharmacological
11 differences between nicotine and amphetamines?

12 A. In a similar fashion, amphetamine does not work
13 through a receptor-mediated process, so many of the
14 things I said about cocaine apply to amphetamine as
15 well.

16 Q. Different mechanism.

17 A. Amphetamine shares with cocaine the ability to
18 block the removal of dopamine from the synaptic
19 cleft, but it probably does that by competing with
20 dopamine for entry into the terminal rather than
21 blocking it from the outside like cocaine does and
22 just covering it up, you might say. The consequence
23 of that is that some of the amphetamine gets into the
24 nerve terminal and is able to displace dopamine from
25 inside because it's chemically very similar to

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1 dopamine and it fools the binding sites, you might
2 say, inside the synaptic vesicles to displace
3 dopamine and then incorporate amphetamine in place of
4 the dopamine so the dopamine is released. So it has
5 a combined action.

6 Q. Other than the mechanism of action which you
7 describe, are there other pharmacological differences
8 between nicotine and amphetamines?

9 A. Again, I'm sure there are that are probably not
10 all that important to its dependence potential, but
11 again, pharmacokinetic characteristics and areas of
12 the brain it might work in.

13 Oh, it also, like cocaine, only works on the
14 monoamine transmitter systems. It does not release
15 the amino acid transmitters, for example, some of the
16 polypeptide transmitters, like nicotine can do.

17 Q. What are the pharmacological differences between
18 nicotine and morphine?

19 A. Well morphine is a totally different class of
20 drugs because nicotine, cocaine and amphetamines fall
21 into the psychostimulant class; morphine is an
22 opioid, it works on different subclasses of opiate
23 receptors, which there are five different subclasses
24 or so. It's an analgesic, produces very strong
25 physical dependence in contrast to what we talked

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1 about cocaine, which doesn't produce that much
2 physical dependence, very strong withdrawal symptoms,
3 very marked tolerance, so in that respect it's quite
4 different from cocaine and amphetamines. Its actions
5 are -- its actions are mediated through receptors and
6 can be blocked by receptor antagonists, which is the
7 mechanism for the treatment syndrome for heroin
8 addicts and morphine addicts. There are also some --
9 a lot of pharmacokinetic differences for methadone
10 treatment with addicts, so you can treat with an
11 agonist compound that also stimulates the receptors.
12 I mean there are a lot of differences with --

13 Q. It is your opinion that there are similarities
14 between nicotine and caffeine, right, --

15 A. Yes.

16 Q. -- in terms of pharmacological action --

17 A. Yes.

18 Q. -- and in terms of the release of
19 neurotransmitters?

20 A. Yes.

21 Q. Let's spend a few minutes talking about
22 caffeine --

23 A. Okay.

24 Q. -- before we have a coffee break.

25 What are the similarities between the actions of

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1 nicotine and caffeine?

2 A. Both nicotine and caffeine work through a
3 receptor process. They are both psychostimulants
4 that work at the dopaminergic nerve terminal. Like
5 nicotine, caffeine can facilitate the release of a
6 large number of transmitters. In our previous
7 discussion we talked about whether nicotine was
8 affecting normal physiological processes in the body
9 through the cholinergic system. Caffeine in that way
10 probably also affects normal physiological process
11 through the adenosine receptor, which is the receptor
12 it works on. Does not block the reuptake, so the
13 compositions of dopamine can be removed from the
14 synapse back into the pre-synaptic side.

15 And I think the measurements of neurochemical
16 effects with caffeine are also rather undramatic. I
17 think caffeine has, again, weak dependence potential,
18 weak withdrawal symptoms, very weak or mild physical
19 dependence.

20 Q. As between caffeine and nicotine, do you have an
21 opinion as to which has the greater dependence
22 potential?

23 A. Well it's very hard to tell because no one takes
24 either of these drugs in pure form to produce
25 dependence, so I have to base this on kind of the

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1 neurochemical effects. I would predict from what I
2 know about the neurochemical effects that nicotine
3 would be a stronger dependence-producing drug than
4 caffeine, but it's close to caffeine. It's not
5 markedly different from caffeine.

6 Q. And that's based on the neurochemical effects?

7 A. That's about all we have, because there are no
8 instances that I know of anyone addicted to caffeine
9 or nicotine.

10 Q. And --

11 A. So I can't tell what the dependence-producing
12 potential of those drugs are because no one is
13 dependent on them.

14 Q. And what is the medical or scientific evidence
15 of the neurochemical effects of nicotine versus
16 caffeine?

17 A. Just self-administration studies, how well
18 animals will respond for those two compounds, the
19 ability to release dopamine in the brain. There's a
20 test called place-preference conditioning where you
21 can try to see how well an animal, quote, likes a
22 certain situation that's been paired with the drug --

23 Q. Uh-huh.

24 A. -- to see if it's something they like or not.

25 So in some of these paradigms it looks like nicotine

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1 is probably a little bit more active than caffeine.

2 Q. With respect to that, is the taste or flavor of
3 nicotine a factor in validity if not the reliability
4 of those studies that administer pure nicotine, in
5 your judgment?

6 A. Well they would be for oral administration, I'm
7 sure, or maybe inhalation administration. They --
8 they wouldn't be at all for intravenous
9 administration.

10 Q. Self-administration studies that you're speaking
11 of are the oral administration studies?

12 A. With the animals they would be intravenous, when
13 I'm talking about animal --

14 Q. Uh-huh.

15 A. -- self-administration studies. Human
16 self-administration studies, some of those are
17 intravenous as well. So they've tried to see what --
18 how much euphoriant effect intravenous injection of
19 nicotine would produce, and in that case there would
20 be no -- that I could see, any really sensory effects
21 to the nicotine.

22 Q. When you describe nicotine as stronger than
23 caffeine based on neurochemical effects, can you
24 quantify that at all?

25 A. A number?

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1 Q. Or a series of numbers or a range.

2 A. Maybe 50 percent greater increase, and that's
3 very rough because there are lots of different
4 studies. With self-administration it's probably more
5 than that, it's probably -- this is animal
6 self-administration studies -- it's probably --
7 probably at least double. Euphoriant potential,
8 they're probably closer, because caffeine has the
9 euphoriant component in human IV injections and so
10 does nicotine, but neither of those is real dramatic
11 but very subjective. The kind of measurements you
12 say, "How good does this make you feel?" One to 10.
13 And so --

14 MR. SILBERFELD: Let's take five.

15 (Recess taken.)

16 MR. SILBERFELD: Let's go back on the
17 record.

18 We've had an off-the-record discussion with
19 respect to a question asked this morning where I
20 deferred it on grounds that it would potentially
21 invade some work-product issues. Let me go ahead and
22 ask the question. Counsel will react however they
23 may.

24 BY MR. SILBERFELD:

25 Q. Dr. Rowell, I asked you this morning whether

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1 there was any work in progress which has been
2 assigned to you but which you've not yet completed in
3 this case. Is there any such work?

4 A. I would say no in this case.

5 Q. There are the two binders of the three that you
6 got about three weeks ago that you have not completed
7 looking at. What is your intention with respect to
8 those?

9 A. I will get around to reading those documents one
10 by one. I'll make another --

11 My plan is to make another note page on the
12 documents as I read them and see if they provide any
13 new information or change my opinion or otherwise
14 enlighten me about what was in the company documents,
15 pertaining, again, to whether this was new
16 information, would have produced some significant
17 advancement, and was of sufficient quality to be
18 published.

19 Q. Is there any work that you've been asked to
20 perform that is not complete that is of a generic
21 quality; that is, it isn't specific to either this
22 case or another case, but may be work that could be
23 applicable to this case? Is there any such thing?

24 A. I'm in the process of getting together my ideas
25 for possible testimony if I'll be called to be an

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1 expert witness, what I will say relating to how
2 nicotine works in the brain, getting together some
3 visual aids and things like that.

4 Q. For this case or other cases, or both?

5 A. Wherever I'm asked --

6 I'll probably use the same material wherever I'm
7 asked to provide testimony.

8 Q. And what --

9 A. And by whichever side.

10 Q. And what is the state of preparation of that
11 aspect of your testimony?

12 A. It's in its infancy. There's nothing that has
13 actually been developed yet, but I have sketched out
14 a possible scenario for explaining how -- what --
15 what nicotine does and how it works in the brain and
16 how it compares with other drugs, just the
17 conversation we just had.

18 Q. It's an outline of sorts?

19 A. Yes.

20 Q. Is it in writing or in your head, or both?

21 A. No, it's in pencil on pieces of paper,
22 scrawling -- scrawled down on note cards.

23 Q. Is it substantially different in any respect
24 than the report you've written in this case?

25 A. Well I'd have to go back to look at the report

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1 and see what the -- what the format is. I don't
2 think it's substantially different. I think the
3 things that I'll be talking about have been addressed
4 in the expert report.

5 Q. And there are sort of graphs, charts, visual
6 aids, diagrams contemplated as part of this
7 presentation?

8 A. Yes.

9 Q. And have those been gathered?

10 A. Some of those have been gathered. We're still
11 working on putting some more together.

12 Q. Does any part of this trial-testimony-
13 preparation process include any video presentations?

14 MR. GINDER: Object. We're going to object
15 at this point on work-product grounds and
16 attorney-client privilege.

17 MR. SILBERFELD: And instruct?

18 MR. GINDER: Yeah.

19 BY MR. SILBERFELD:

20 Q. Is the trial-testimony-preparation project, if
21 you will, going to include any medical literature
22 references that are not included in either your
23 report that you gave us or in the historical review?

24 A. Right now I wouldn't --

25 MR. GINDER: Before you answer that, could

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1 I look at the question here?

2 MR. SILBERFELD: Hold on.

3 MR. GINDER: I think the same objection and
4 instruction would apply to that in terms of what the
5 actual trial testimony will look like or not look
6 like as preparations are made for trial. And we do
7 have his report here that does have his opinions and
8 conclusions that he intends to testify about, and
9 that's in the report, and you can certainly ask him
10 about any of those.

11 MR. SILBERFELD: I just want to be clear
12 about what my question pointed at, and that was any
13 medical-literature references that the doctor would
14 rely on that are not listed either in the report or
15 in the historical review. Candidly, I think we're
16 entitled to that.

17 MR. GINDER: If you're asking whether there
18 is anything that is not listed that he's used in
19 coming to his opinions and conclusions, I think
20 that's a different question than the one you asked,
21 which was related to trial testimony.

22 BY MR. SILBERFELD.

23 Q. Well I'm assuming, Dr. Rowell, that at the time
24 of trial you'll give fundamentally the same opinions
25 you're giving here at deposition. Is that your

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1 understanding?

2 A. I don't know what will be contained in the
3 tobacco documents that I haven't seen yet, first of
4 all, so I don't know what will happen there. I also
5 ongoing, as part of my research, continue to keep up
6 with the literature and see things as things
7 progress. I don't know when these trials are going
8 to occur, it could be quite a ways from now, and I
9 may run into some other articles that either
10 reinforce or dilute my opinion, so it's really hard
11 for me to say. But at this point I don't have any
12 concrete plans or reference that I know that I will
13 rely on that aren't in the expert report or in the
14 historical review.

15 Q. What other aspects of the trial-preparation
16 project for the future do you have in mind, other
17 than the cards that have an outline, visual aids?
18 Those are the only two questions you've been
19 permitted to answer. Any other aspects to that part
20 of the work that is to be done in the future?

21 MR. GINDER: Again object on the basis of
22 privilege, work product, and instruct not to answer.

23 Q. Just to be clear, the work that you're doing in
24 preparation of trial testimony is not with regard to
25 any specific case. Is that true?

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1 A. Well I was designated in the Florida case, and I
2 think, as I was working, my conception was that that
3 would be used in the Florida case.

4 Q. Probably won't happen now.

5 A. It probably won't happen now.

6 Other than that, I can't really answer. It's
7 generic.

8 Q. Have you been asked to testify in the Minnesota
9 case at trial, specifically?

10 A. I've been designated an expert witness, but
11 as --

12 Well if I understand your question, I've not
13 been asked to testify, no.

14 Q. Have you agreed with anyone, whether they asked
15 you or not, to testify in the Minnesota case coming
16 to trial?

17 A. No.

18 Q. From your review of the tobacco company
19 documents, at least for the four companies whose
20 documents you reviewed in whole or in part, do you
21 have an opinion as to whether they had an
22 understanding as to the health effects of their
23 products?

24 MR. NIMS: Objection.

25 A. The "they" are the people that made the

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1 statements? I would say they expressed an opinion
2 about the health effects in the documents, but I
3 don't know what the tobacco companies' opinions on
4 the health effects were.

5 Q. Well without getting into the legalese as to
6 whether those statements are binding on the
7 companies, you understood, did you not, that some of
8 the people who expressed views in the tobacco company
9 documents were scientists?

10 MR. NIMS: Objection.

11 A. I guess I'm assuming that some of them were
12 scientists.

13 Q. Well some of them were ad people, some of them
14 were lawyers, but some were scientists.

15 A. Right. And I don't know which were which. And
16 I'd say most of the ones I read weren't from the
17 scientists, I think, but I'm not sure because I
18 didn't track down their titles. But some of them
19 were clearly scientists.

20 Q. From an ethical standpoint, do you believe that
21 a manufacturer has a duty to understand the health
22 effect of its products?

23 MR. NIMS: Objection.

24 A. I would say so from an ethical standpoint.

25 Q. From an ethical standpoint, does a manufacturer

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1 of a product have a duty to test its product for
2 health effects?

3 MR. NIMS: Objection.

4 A. Again, outside of my area of expertise, but my
5 personal opinion is that they -- they would want to
6 do that. Whether they have a duty, I don't --

7 The "duty" implies to me some kind of maybe
8 legal thing, but --

9 Q. Medical ethics.

10 A. Yeah, I --

11 MR. NIMS: Objection.

12 A. Outside of my area. But it would seem to me it
13 would be something that they would do.

14 Q. Have you made any evaluation in the course of
15 your review of the tobacco company documents for the
16 four firms for whom you've seen documents as to
17 whether they fully and completely discharged what you
18 regard as their ethical obligations to study their
19 own products for health effects?

20 MR. NIMS: Objection. I think --

21 A. Fully and completely --

22 MR. NIMS: -- it should be clear that he
23 has by no means seen every document that the industry
24 had, and I think you'd have to have seen every
25 document the industry had to even begin to answer

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1 that question.

2 MR. SILBERFELD: Well based on what you
3 saw.

4 THE WITNESS: Yeah.

5 A. Based on what I saw, it looks like the
6 information on the health effects of their products
7 largely came from non-industry sources, they -- they
8 understood the health effects based on research that
9 was done outside the industry, and these were large
10 epidemiological studies of large populations where it
11 first became apparent that cigarette smoking
12 contributed to cancers and emphysema and things like
13 that that you talked about that I can't expect that
14 the tobacco companies would have been able to
15 undertake. These were retrospective studies rather
16 than prospectively designed studies. So they came to
17 these opinions, I think, based on outside information
18 from the medical community.

19 Q. So based upon what you've seen, let's take
20 cancer for example, --

21 A. Yeah.

22 Q. -- it's your view that the tobacco firms whose
23 documents you saw came to understand about the health
24 effects from external sources such as government or
25 science which had studied the relationship between

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1 smoking and health effects.

2 MR. NIMS: Objection, way beyond the
3 ability of the witness to answer.

4 A. I can give you a personal opinion again, because
5 again I don't have all the documents, I don't know
6 what they've studied, but the -- the health effects
7 were discussed early on in the '50s, probably, when
8 it really started. In the '64 Surgeon General's
9 report and things like that they made reference to --
10 they -- they knew the work and were up to date on the
11 literature, but didn't conduct multi-center studies
12 on the effects of their products. It didn't seem to
13 be in the documents that I've read, but I haven't
14 read health-effects documents, I've been reading
15 nicotine documents.

16 Q. Are you familiar with what's been referred to as
17 the frank statement? The frank statement.

18 A. No.

19 Q. Are you aware of the fact that in January of
20 1954, cigarette companies took out newspaper
21 advertisements in response to certain medical
22 information that was published at the time about the
23 health effects of cigarettes? Were you aware of that
24 generally?

25 A. I'm not aware of that in a general sense, no.

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1 Q. Let me ask you to assume that that happened and
2 further assume that as part of that full-page
3 advertisement which was captioned "A Frank Statement
4 to Cigarette Smokers," the tobacco companies,
5 including some of the companies whose documents you
6 reviewed, made the statement that "We accept an
7 interest in people's health as a basic
8 responsibility, paramount to every other
9 consideration in our business." With that statement
10 in mind -- and I ask you to assume that's true, that
11 that in fact occurred -- do you believe that that's a
12 true and correct statement of the manufacturer's
13 responsibility with respect to its products?

14 MR. NIMS: Objection.

15 A. Is that a true and correct responsibility? I
16 would say that's a reasonable responsibility. I
17 don't know what --

18 I guess I don't understand the question.

19 Q. Nobody's shown you any documents relative to
20 such a statement having been made by the tobacco
21 companies?

22 A. No.

23 Q. Let's turn to that part of your report beginning
24 at page three and following about the characteristics
25 and definition of dependence. We've talked about

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1 this some, but let's do it in a bit more detail in
2 the time remaining for today.

3 You say that one of the principal factors
4 contributing to drug dependence is the ability of an
5 agent to produce some type of reward or positive
6 reinforcement, such as the elevation of mood,
7 euphoria, alleviation of discomfort or relief of
8 anxiety; right?

9 A. Yes.

10 Q. Does nicotine do that?

11 A. To some degree, yes.

12 Q. Through cigarette smoking?

13 A. I would say so, yes.

14 Q. And does it do each of the things you list; that
15 is, elevation of mood in some people?

16 A. In some people. But I'd say that was not a
17 dramatic effect.

18 Q. How about euphoria?

19 A. Not a big effect.

20 Q. Alleviation of discomfort?

21 A. In the -- in --

22 Yeah, in the fact that it probably avoids
23 withdrawal symptoms, that's --

24 I can't find it on the page, but -- okay.

25 Q. Does nicotine produce a reward or positive-

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1 reinforcement phenomenon of relief of anxiety in some
2 people?

3 A. I would say so.

4 Q. And does nicotine, through cigarette smoking,
5 produce in some people a combination of these reward
6 or positive-reinforcement phenomena?

7 A. I would say so.

8 Q. Does the fact that nicotine through cigarette
9 smoking provides these reinforcements lead to
10 repeated administration of the drug through further
11 cigarette smoking in your view?

12 A. I would say it contributes to the continuing of
13 cigarette smoking.

14 Q. What's the rest of the equation?

15 A. The behavioral components of the conditioning,
16 that a lot of behaviors that I can think of which
17 have no drug effects are similar to those.

18 Q. While we're at this point, can you list for me
19 the behavioral components of smoking that you'd
20 regard as, along with nicotine, being the factors all
21 taken together which contribute to continued smoking?

22 A. Okay. I would say the manual manipulation of
23 the cigarette would be similar to pulling hair,
24 biting fingernails; it's kind of a motor activity.
25 The conditioning of a behavior that's pleasurable

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1 would be similar to compulsive snacking or maybe even
2 gambling or something like that; behaviors that are
3 continued. There are some sensory components to
4 cigarette smoking which have to do with the taste,
5 which might again have to do with, like -- closest I
6 can get would be eating again where you have a
7 sensory component to the eating behavior which can be
8 compulsive and to a -- to an excess. So those --
9 those three would be sensory component, a behavioral
10 and a motor manipulation kind of component, and there
11 are probably others.

12 Q. Does smell have something to do with the
13 sensory?

14 A. I would say so. It would be part of the sensory
15 component.

16 Q. And these may overlap, I suppose. But does the
17 sensory component also include the tactile that is
18 part of the manual manipulation of holding the
19 cigarette and so forth?

20 A. It's a little bit outside of my area of
21 expertise. I would say the tactile is a little bit
22 more related to repetitive motion type of things like
23 fingernail biting or constantly tapping fingers than
24 it is to a sensory component, but there is probably
25 some sensory component to manipulating the

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1 cigarette.

2 And we didn't touch on genetic factors and
3 environmental cues that have to do with the cigarette
4 smoking.

5 Q. Are those part of the behavioral components?

6 A. I think they're part of the conditioning
7 component. The genetic factor, that's not very well
8 understood as far as why some people find it very
9 difficult to stop smoking and other people don't find
10 it difficult to stop smoking, and who begins smoking
11 and who doesn't, so there is a big research effort
12 trying to find if there is a genetic -- I think
13 people would agree that there is a genetic basis, but
14 what that is is fairly obscure. But that is a
15 component of the smoking behavior as well.

16 Q. So as we sit here today, with respect to the
17 genetic component, can we do anything more than put a
18 question mark next to it?

19 A. I think there have been some attempts to try to
20 identify certain types of individuals who would be
21 smokers or be more apt to have a difficulty giving up
22 smoking. Nervous individuals, that is one I can
23 think of. Things like that.

24 Q. And that's regarded as a genetic component as
25 opposed to environmental?

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1 A. I don't think that's known. But nervousness
2 maybe has a genetic component, yeah.

3 Q. And under the umbrella of environmental factors,
4 what's included there?

5 A. What I meant was situational type of things
6 where some people smoke with their cup of coffee or
7 with their desert or in certain situations, social
8 situations. When they're with other friends that
9 smoke. There's a -- there's an urge and a craving to
10 smoking that I think is satisfied by the smoking
11 behavior and not by the nicotine which is, seems to
12 me, a very much environmental conditioning type of
13 thing. I think these are all things that contribute,
14 very pronounced in importance, to cigarette smoking
15 apart from just the pharmacological effects of
16 nicotine.

17 Q. I just want to make sure I've got them all.
18 Under behavioral components we have the manual
19 manipulation of the cigarette; the behavioral like
20 snacking, and that's the compulsive behavior; and
21 lastly the sensory component. We have genetic
22 components as a factor, and environmental, such
23 as --

24 A. Kind of situational components.

25 Q. -- you do it at parties, you do it with other

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1 people who smoke, you do it --

2 A. The environmental cues that make you want to
3 smoke a cigarette in certain situations.

4 Q. And then of course nicotine.

5 A. And then nicotine.

6 Q. Are there any other factors that promote or
7 encourage, if you will, cigarette smoking other than
8 these?

9 A. Well for any individual, that's a hard question
10 to answer.

11 Q. Across the population.

12 A. For a general -- yeah. It's really --

13 For example, certainly with teenage smokers,
14 peer pressure is going to be very pronounced. If
15 they feel like they're grownups, they want to be a
16 little bit rebellious. I think those things
17 contribute to at least starting smoking. I think
18 it's hard to argue with that. There are probably --
19 not probably, possibly other pharmacological
20 components to tobacco which contribute to cigarette
21 smoking.

22 Q. Such as what?

23 A. Well there's been some indication that there are
24 some compounds that are monoamine oxidase inhibitors
25 that prevent the breakdown of the dopamine quite as

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1 rapidly and could reinforce. There are other
2 compounds in tobacco that also release dopamine and
3 some other neurotransmitters; generally these are
4 nicotine-like compounds in smaller concentrations. I
5 don't know whether those are going to be major
6 constituents that would contribute, but it's a
7 possibility. And there is some indication there are
8 compounds that may block reuptake of dopamine, but
9 again I think it's likely that they don't contribute,
10 that the concentrations are not high enough to
11 contribute to smoking. But the possibility is there.

12 Q. Have you done any work yourself on monoamine
13 inhibitors?

14 A. Yeah. Dr. Carr was the major investigator on
15 studying monoamine inhibitors.

16 Q. With you?

17 A. Yes.

18 Q. Any other factors that affect the decision to
19 continue smoking other than the ones we've now
20 discussed?

21 A. To continue smoking?

22 I mean I'm sure, again, there are lots of
23 factors. I could probably think of maybe some others
24 like --

25 Well I mentioned peer pressure, but whether your

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1 wife or relatives smoke, what degree of negative
2 reinforcement you get from your colleagues and things
3 like that could contribute. The importance that you
4 place on the health effects, the health consequences
5 of the smoking compared to the enjoyment that you
6 want to get. Your understanding of -- somebody's
7 understanding of the statistical correlation between
8 smoking and the diseases we talked about may
9 influence whether people continue to smoke. If there
10 was no knowledge of that effect, they would probably
11 be disinclined to stop something they enjoy doing.

12 Q. With the exception of the nicotine effects,
13 would the rest of these factors really be more in the
14 area of psychology or sociology than pharmacology?

15 A. Yeah, because that's the study of behavior.

16 Q. Right.

17 A. And particularly the first few that I gave you
18 with conditioning and compulsive behaviors and things
19 like that would be the purview of a psychologist.

20 Q. So on those subjects, would you yourself defer
21 to a psychologist or a psychiatrist to opine on
22 those, limiting yourself to the pharmacological
23 effects?

24 A. To the extent that the psychologist would defer
25 to me on the pharmacological effects of nicotine.

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1 Q. In order for cigarette smoking to become a
2 compulsive behavior, does it require more than the
3 nicotine effect? Do the other factors, the
4 behavioral ones, the environmental cues and so forth
5 have to be present, in your view?

6 A. Well the definitive study again has not been
7 done, so in the absence of that I would say the other
8 factors are necessary.

9 Q. Your report --
10 The reason I ask you this question is your
11 report says, "One or a combination of these
12 reinforcing effects encourages repeat administration
13 of the drug which can lead to compulsive drug use."
14 No mention, at least in this statement, of the other
15 factors.

16 A. Well --

17 MR. NIMS: Objection.

18 Q. My question is: Can the nicotine effect of
19 relieving anxiety, alleviating discomfort, elevation
20 of mood, euphoria, whatever, in and of itself lead to
21 repeat administration by continued smoking and
22 compulsive behavior as a result?

23 A. In the absence of any of the other things.

24 Q. Yes.

25 A. I'm not inclined to think so because I don't see

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1 in the studies that I've looked at of the effects of
2 pure nicotine on subjects its reinforcing value, its
3 euphoriant value, the withdrawal symptoms, things
4 like that, that it alone is able to lead to a drug
5 dependence.

6 Q. And --

7 A. So I would have to say that it's -- it is in
8 large part the other things that we talked about that
9 are necessary for the cigarette smoking behavior to
10 be continued, and in the absence of those you
11 wouldn't get the cigarette smoking just for the
12 nicotine effect, if I'm understanding your question
13 correctly.

14 Q. You are.

15 Let me turn the question around. This is the
16 last question of the day. In the absence of nicotine
17 present in the cigarette, do you believe that the
18 other factors that are involved in the decision to
19 continue smoking can lead to compulsive behavior?

20 A. Again, that is difficult to answer because there
21 are no studies where smokers are given the choice of
22 only a nicotine cigarette and a non-nicotine
23 cigarette, so in all the studies that have been done
24 they've had the choice of the nicotine cigarette, so
25 nicotine obviously contributes. If all they had

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1 available was non-nicotine cigarettes, it is very
2 likely that many people would find cigarette smoking
3 unsatisfying and probably many people would stop, but
4 there may be a large number that would continue to
5 use all the behavioral cues and continue to do it. I
6 can't answer the question without the study.

7 Q. Which hasn't been done.

8 A. Which hasn't been done.

9 MR. SILBERFELD: Sounds like a logical
10 place to stop.

11 (Deposition recessed at 4:12 o'clock p.m.)

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1 C E R T I F I C A T E

2 I, Richard G. Stirewalt, hereby certify
3 that I am qualified as a verbatim shorthand reporter;
4 that I took in stenographic shorthand the testimony
5 of PETER R. ROWELL at the time and place aforesaid;
6 and that the foregoing transcript consisting of pages
7 1 through 253 is a true and correct, full and
8 complete transcription of said shorthand notes, to
9 the best of my ability.

10 Dated at Minneapolis, Minnesota, this 26th
11 day of August, 1997.

12

13

14

15 RICHARD G. STIREWALT

16 Registered Professional Reporter

17 Notary Public

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1 C E R T I F I C A T E

2 I, PETER R. ROWELL, the deponent, hereby
3 certify that I have read the foregoing transcript
4 consisting of pages 1 through 253, and that said
5 transcript is a true and correct, full and complete
6 transcription of my deposition except:

7

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11

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13

14

15 PETER R. ROWELL

16 Deponent

17

18 Sworn and subscribed to before me this day
19 of , 1997.

20

21

22

23 Notary Public

24

25 My commission expires .

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